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SURGICAL THERAPEUTICS

BY

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FOREWORD

There are hundreds of books telling how to operate—not one describing the proper management of the patient *without* operation. Almost as many give careful directions as to when operations should be done—but with only trifling mention of the proper preparation of the patient for the operative work, of the best way to make him comfortable after operation, or of the right management of the wound to get ideal results. In other words: there is no work on the non-operative treatment of surgical conditions. The object of this little book is to give some of the important points neglected by or omitted from the more elaborate works on surgery.

It is based chiefly upon personal experience, especially in the management of cases in the country and in private houses in the city, though of course many of the suggestions are for especial use in hospital practice. It is not intended to be regarded as a complete treatise on “Surgical Therapeutics,” indeed, it might perhaps more properly be called “Practical Suggestions for the Management of Surgical Cases.” If it meets the approval of the vast number of doctors who try to manage their own surgical cases, it will be followed later by a more elaborate, complete work covering the entire field of non-operative surgery.

If the reader who is interested in this line of work will deliberately read this little book "straight through" from beginning to end, and then later refer to any special section he may desire to, he will, I am sure, obtain better results than if he attempt to merely read here and there as his fancy may dictate.

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ABDOMINAL SECTION

Abdominal Tumors.—As a rule, operable tumors should be removed at the earliest possible moment after their existence is detected. Those which are usually removable without much danger are: (1) tumors of the gall-bladder, (2) tumors of the intestine, (3) tumors of the omentum, (4) tumors of the uterus, (5) tumors of the ovary. Those which may sometimes be removed, with a considerable degree of danger, are: (1) tumors of the stomach, (2) tumors of the bladder, (3) tumors of the broad ligament, (4) tumors of the kidney. Those which are rarely removable are: (1) tumors of the liver, (2) tumors of the pancreas, (3) tumors of the spleen. When it is certain these growths are of malignant character the probabilities of cure even by early excision are not good. Nevertheless, very much may often be done by purely palliative operations (such as gastroenterostomy, artificial anus and the like) which will prolong life and make the sufferer far more nearly comfortable. When any (even inoperable) tumor undergoes suppurative inflammation the pus should be evacuated by two operations: the first to secure protective adhesions, the second to drain the abdomen.

Adhesions: Prevention of.—In abdominal surgery one of the most important things is to leave the belly in such shape that adhesions will not form. To this end much time may profitably be spent (except in cases of emergency where immediate closure is imperative) in doing work to prevent any raw surface being left exposed; for, if it be, an intestine or other structure is almost certain to adhere and cause future suffering—especially in nervous, hysterical or neurasthenic persons.

The best way is to cover thoroughly every denuded surface with peritoneum; but if this is impossible, the omentum is to be brought to the bare place and sutured over it, if possible, in such way that there is no traction on the omentum. In some cases, where neither can be done, it is good practice to rub the raw surface thoroughly with sterilized olive oil. Silver-foil has been suggested, but it cannot be employed satisfactorily and should not be tried (though it may be used in the brain). A 20-percent solution of gelatin with 1-percent formalin has also been recommended, but is worse than useless. Cargile membrane has also proven of little value in my own experience.

On the whole it may be said that there is no effectual way of preventing adhesions except carefully to cover every torn or cut surface with peritoneum or omentum. Even rough handling of intestines with gauze or towel will produce enough erosion of the serosa to cause adhesions; hence the necessity of dealing as gently as possible with the peritoneum everywhere.

Calomel in Abdominal Surgery.—Calomel is a favorite with many surgeons who do much abdominal work—not in the large doses of our forefathers, but in tablets or granules containing a half centigram (approximately 1-12 grain) in sugar of milk. These are given beginning on the second day following operation, at which time the tongue is often dry, the abdomen slightly tympanitic and the stomach a little disturbed, especially if too much water has been permitted. If to such a patient one tablet be given every hour (one every half-hour if early catharsis seems desirable) until ten are taken, there will be a marked change for the better in patients not too profoundly septic; the tongue will become moist, gas will begin to pass, the nausea will disappear, thirst will diminish and, if at the end of the course a mild saline laxative be given, free bowel-

movement will speedily follow—after which the period of acute danger will have been passed.

Codeine in Abdominal Surgery.—One of the most useful drugs in abdominal work is codeine phosphate. The phosphate is preferable to the more common sulphate on account of its free solubility—of particular importance for hypodermic medication. It is the best of all preparations of opium because (1) it does not check secretions like morphine, (2) a codeine habit is not easily formed and (3) it does not produce the distressing secondary nausea of other opiates. After an abdominal section, when the patient complains bitterly of pain and general discomfort, fifty centigrams (from a half grain to a grain) may be injected and repeated in an hour if necessary. It being mildly anodyne and hypnotic the patient generally feels sufficiently comfortable after two doses not to require a third for some hours, when the two doses one hour apart may be repeated. Old tablets may not dissolve readily; if so, add a little phosphoric acid.

Elaterin in Abdominal Surgery.—After certain operations it becomes necessary to secure very early bowel-movement; calomel is too slow and salines are apt to provoke vomiting. Here elaterin (the glucoside active principle of the elaterium of the shops) can be employed with the greatest satisfaction. It should be given in granules, each containing one milligram ($\frac{1}{67}$ th of a grain) one every hour until five or six have been taken or copious movements have been secured. If emesis results, the elaterin should be temporarily discontinued and one milligram of salicylate of eserine given hypodermically every hour, four times; by this the peristaltic wave will be reversed and the fecal current started downward; then the elaterin may be resumed. When black-vomit begins after operation, this is by far the most effective; especially when supplemented by washing out the stomach.

Enema after Abdominal Section.—After abdominal section cathartics can not be given early by the mouth on account of nausea. In such cases when it is desirable to secure bowel-movement the following enema thrown high into the rectum, may be given:

Epsom salt, 50-percent solution.....	ozs. 2
Oil of turpentine	ozs. 2
Glycerin	ozs. 2
Water.....	ozs. 6

The injection is to be held in the bowel as long as possible by the patient. It is well to anoint the inner thighs and buttocks in order to prevent irritation of the parts should they come in contact with the turpentine by mischance.

Opium after Abdominal Section.—The only cases in which opium (or morphine) is indicated after abdominal operations are those in which the intestine has been injured, cut into, torn into, or anastomosis made. Then peristalsis is undesirable, as any movement of the bowels tends to prevent the formation of early, firm adhesions on which the life of the patient depends. Opium above all other drugs checks peristalsis; hence full doses of sulphate of morphine may be injected hypodermically every four to six hours during the first forty-eight hours following such an operation; but no further use would be beneficial, as adhesions have been formed by that time, if ever. In all other section-work, if an opiate seems unavoidable, grain-doses (six centigrams) of phosphate of codeine may be injected hypodermically every three or four hours as required; morphine alone, never.

Peritonitis Following Operation.—Peritonitis is a localized trouble, and is essentially life-saving when not too extensive or severe, the adhesions formed thereby serving to limit the spread of suppuration. That which is commonly called "general peritonitis," with its

vomiting, collapse and death, is acute sepsis of the most serious type.

But sometimes the peritoneal surfaces do not agglutinate around a point of infection (as a typhoid perforation, a gangrenous appendicitis or a pus-tube) and the general peritoneal cavity becomes a huge absorption-sac, so that the system is speedily overwhelmed and death from poisoning of the heart-muscle (with true "heart-failure") quickly supervenes—unless the surgeon has the courage and the skill to act promptly and properly.

These are the cases formerly treated by Sir Andrew Clark with calomel, followed by opium—the idea being to paralyze the bowel so that protective adhesions may form—and still advocated by some who are not familiar with intra-abdominal pathology. With this line of treatment it is common to order hop poultices, turpentine stupes, Credé's ointment, cataplasma kaolini, ice-bags, etc., all of which tend to comfort the patient's mind and afford relief to the anxious friends who want to "do something," but they have but little if any effect upon the pathology save to hasten spontaneous rupture of an abscess about ready to break through the skin.

The truth is, there are but two curative measures possible: to remove (or render less dangerous) a source of local infection, and to rid the peritoneum of the infective material already poured out into it.

It is true that in a large proportion of cases the peritoneum affected is of but trifling extent (as around the appendix, or in the pelvis where absorption is excessively slow, the stomata being very few as compared with the dangerous areas like the diaphragmatic peritoneum) and adhesions prevent the dissemination of the poison. But when symptoms indicate that the protective barrier is not being thrown out there must not be any delay. This rule is applicable alike to appendicitis, to salpingitis, to chole-

cystitis and to intestinal obstructions; it is imperative in all penetrating wounds of the abdomen, in ruptured gall-bladder, in perforation of gastric or duodenal ulcers, in leakage of pyosalpinx, in volvulus and even in the giving way of the intestine in typhoid fever—practically all certain to end in death unless quickly and skilfully remedied.

When there must be some delay in operating, the patient should be kept in the Fowler position: the head of the bed raised upon a chair so that all of the infected fluid in the belly will run into the pelvis where absorption is slow.

Now all this applies with extra force to postoperative peritonitis. Here the surgeon expects serous surfaces to adhere, in order to cover the line of incision and the wounded surfaces. If the work has been performed aseptically a non-inflammatory adhesion will follow, completely burying all exposed and injured surfaces; and results will usually be satisfactory. But if (1) pyogenic bacteria have been carried in by dirty fingers or non-sterile gauze or instruments, or if (2) some pathologic conditions have been found which cannot be entirely excised without soiling of peritoneum, or if (3) some viscus has been so injured that it may discharge infective contents into the peritoneum, a general infection of the peritoneum may occur, with speedy death.

Now, following the abdominal operations there are certain disturbances which are practically normal: slight rise of temperature, vomiting, pain, etc., yet which if continued clearly indicate serious peritoneal infection; so the question of greatest import is: What are the signs pointing unequivocally to peritoneal infection?

The first and foremost symptom is vomiting. When the bile-tinged water changes to a greenish-brown and when the straining of anesthesia-emesis is succeeded by practically effortless vomiting (not immediately and permanently re-

lieved by once washing out the stomach) there can be no doubt of serious sepsis, and delay in proper treatment means a fatal termination.

Accompanying this is persistent refusal of the bowels to move, not even gas escaping. With this absence of peristalsis comes distension of the abdomen—tympanites. If under the most vigorous purgatives, supplemented by high enemata, no bowel-movement can be induced the experienced operator does not hesitate to open the belly to correct the disease if possible. He who waits until stercoraceous vomiting appears never saves a life.

The temperature behavior is peculiar. There is rarely much fever; the very worst cases have a subnormal record. But if there be a fever above 101°F. , it is corroborative (merely) of the other signs.

If now, to the signs of persistent vomiting, tympanites and paresis of gut, there be added a knowledge that there is strong probability of something wrong inside, as a failure to provide drainage in a doubtful case, the likelihood of a leakage from an improperly closed opening in intestine or gall-bladder, too free oozing into the pelvis from torn adhesions, uncertainty as to perfect aseptic technic during operation, etc., the surgeon ought scarcely to hesitate about the justifiability to reopen and clean up. Yet even the most experienced surgeons do hesitate in this matter, often “hoping against hope” until it is too late.

As soon as it has been decided that reopening the abdomen is necessary, an injection of one tablet of the hyoscine-morphine-cactin anesthetic is to be made (hyoscine, gr. 1-100; morphine, gr. 1-4; and cactin, gr. 1-67); by the time instruments and hands are sterilized the patient will be so sleepy that but a few drops of chloroform will be needed—a matter of great importance because the patient is already so weak and nauseated; besides it induces a condition of tranquillity after the work is done. In case the

patient is too weak for an inhalent anesthetic the work may be done with one hypodermic injection, plus cocaine anesthesia locally; but it is best, when possible, to have the patient oblivious to what is being done.

Invariably before beginning the operative work the stomach must be washed out with salt-solution.

The belly should be opened with two objects well defined in the mind of the surgeon: (1) To clean out the abdominal cavity as speedily and perfectly as possible and (2) to locate quickly and correct the source of infection; or if not possible of correction, to afford perfect drainage.

1. To attain the first, one must be guided by the conditions present as to method: (a) When the infection is presumed to be general, and dependent upon faulty technic (dirty hands or instruments or sponges) probably the best procedure is to open widely the wound and pour in large quantities of normal salt solution, temperature of 102°-105°F., inserting a hand first into the pelvis and separating the coils of intestine so that irrigation may reach all parts of the lower abdomen; when that has been effectively flushed the hand and the solution are to be turned toward the diaphragm and the upper part of the abdominal cavity washed out with even more care than that bestowed upon the lower tracts where absorption is not so active. From two to ten gallons of salt solution may thus be used—continuing the stream until all flocculi or tinged serum seem to be removed.

In this process of irrigation a large rubber tube with a funnel is the instrument of choice, as the tube can be carried to the depths and the infective material thus be thrown out much more easily than if a pitcher be used and the fluid merely poured in and allowed to run out.

(b) The same method is best when there is intestinal perforation with large outpouring of fecal matter.

(c) When the trouble is due to accumulation of infected serum in the pelvis (as after removal of a uterine fibroid, without drainage) the pelvis only need be irrigated, and it is best to have the patient in the Fowler position during the cleansing so that the infectious material be not spread over the non-infected peritoneum by flooding of the upper abdomen. In such cases it is best to thoroughly dry the pelvis and then pack loosely with gauze (left protruding through the wound) pulling the omentum well into the pelvis and tucking it in around the gauze, between it and the brim of the pelvis.

(d) When the infection is presumed to be merely a localized one, as at the site of pyosalpinx just removed or a recently excised appendix, it is better merely to wipe the peritoneum dry, especially the pelvis and the spaces just below each kidney, where infected serum is prone to accumulate, and insert drainage.

2. When the source of infection is known to be a local one, as (a) a leak from the stump of an appendix, (b) a perforation of gut (quite likely to occur when extensive adhesions between coils of intestines have been broken up), (c) failure to form adhesions around a drained gall-bladder or other infected part, (d) oozing from torn adhesions, (e) contamination by urine through a torn ureter or around a ligature or suture passed into the bladder by mistake, or any other cause, the first duty of the surgeon is to seek this local trouble and correct it, if possible; if not, then to irrigate or clean by wiping, and drain.

In the process of wiping, great care must be exercised not to do harm to the peritoneum. Soft pads of gauze should be used, wrung out of the hot, normal salt solution already at hand for irrigation, if indicated. Pus and flakes of fibrin adherent to the intestine must be carefully removed, but not enough force should ever be employed to make the musculosa bleed, for the serosa often has to be

removed with the fibrin if an attempt be made to get all; it is best to take away only that which comes away easily. As each loop of intestine is cleaned it should be slipped back into the belly and held there, gently, by means of a hot, moist towel or large pads of gauze.

In rare instances when the source of infection is in the pelvis it is advisable to clean the abdomen (and especially the pelvis) as thoroughly as possible and then put the patient in the Trendelenburg position so that all of the intestines are thrown well out of the pelvis, then again clean the pelvis—particularly the depths of the cul-de-sac of Douglas (which cannot well be cleaned with the patient lying flat upon the table) and then quickly pack the entire pelvis with gauze, not very tightly, and hastily return the patient to bed.

As a rule no attempt should be made to suture the incision; one or two through-and-through stitches may be introduced if the cut is unusually long; but in general the dressings supported by two or three adhesive straps and a binder will keep the sides of the wound in close contact with the gauze. Care must be taken not to have the retaining straps or binder so placed as to interfere with drainage, for in free discharge of fluid lies the hope of saving the patient.

As soon as the patient has been returned to bed the most vigorous measures must be instituted to tide him through the next few hours—until protective adhesions can be formed. These are:

1. *Hypodermoclysis.* A quart of normal salt-solution should be thrown into the cellular tissue below the breasts. It may be repeated in four or six hours if indicated, the buttocks being selected for the second injection.

2. *Application of heat.* Hot water bags, or bottles, must be applied to the extremities just as in the treatment of shock.

3. *Hypodermic stimulation.* If the pulse is imperceptible, camphorated oil should be injected. In a few minutes 1-100 grain of glonoin may be thrown under the skin. And in a half hour 1-100 grain of sulphate of strychnine may follow. This may be repeated in an hour if the pulse flags again.

4. *Enemas.* Six or eight ounces of black coffee with one ounce of whisky may be thrown into the rectum as soon as possible after operation. As soon as it is seen that the patient will not die from shock, one milligram (gr. 1-60) of salicylate of eserine should be injected hypodermically, every hour until four doses are given; this starts the peristaltic wave downward and acts as a decided nerve-sedative.

Then one milligram of elaterin (*not* elaterium) may be given by mouth, with a little sup of water, every hour until six doses have been taken. If retained, this will usually cause free, watery discharges from the bowels.

6. *Internal Medicines.* As soon as the stomach will retain anything of bulk, i. e., about the time of the last dose of elaterin, stimulants may be begun, teaspoonful doses of iced champagne every fifteen or twenty minutes being the best. If the patient go to sleep he should not be disturbed for this.

If vomiting occur the stomach must once more be washed out. One lavage will often afford perfect relief from the distressing nausea and the profound depression. Indeed it often seems to do more toward securing a favorable ending than all the other measures together.

Phlebitis.—Phlebitis following abdominal section is quite common. Strange to say, it occurs more often in the left leg, even after appendicitis operations. It is a complication which always causes the surgeon the gravest anxiety. It is attended by pain, tenderness, possibly tympany, and usually some rigidity, associated with fever and leuco-

cytosis. It can only be diagnosed by excluding other symptoms and by demonstrating some peripherally thrombosed vessel. Thrombosis of the long saphenous vein, fortunately not frequent, but occasionally encountered after the cleanest kind of abdominal work, is best perhaps prevented by changing the patient's position and by gentle massage of the extremities, as advised by Martin.

Post-Operative Obstruction of the Bowels.—

Following any operation within the abdomen there is more or less interference with peristalsis. In some cases, such as gastroenterostomy, intestinal resection or anastomosis, and wounds of the gut, inactivity is favorable since it permits of the formation of protective adhesions; but in ordinary abdominal sections the conscientious surgeon feels anxiety until after the bowels have moved freely. For of all postoperative complications ileus paralyticus is most feared, excepting acute sepsis; and indeed many cases of so-called "obstruction" after operation are but acute sepsis, the non-movement of bowels being merely one of the symptoms. But even when septic or agglutinative peritonitis is not severe intestinal inertia may result in kinking of the gut, with adhesions and fatal obstruction, particularly when there has been much rough handling of intestines.

Obstruction of the bowel soon after operation may depend upon:

1. Paralysis of bowel, either septic or spontaneous;
2. Volvulus;
3. Internal hernia;
4. Thrombosis of the intestinal vessels;
5. Surgical interference with peristalsis;
6. Preoperative conditions.

A paralytic condition of the bowels, or at least an inability to move properly, is one of the first symptoms of so-called "septic peritonitis," really acute sepsis; and

associated with the failure to pass gas or feces is vomiting, followed after a few hours by "reversed peristalsis," the expulsion of bile-tinged water and mucus from the stomach changing to stercoraceous vomiting. This is the "black vomit" of acute sepsis so greatly feared. It is to prevent this failure of proper bowel-movement that the experienced surgeon withholds opiates and gives early cathartics. Indeed some operators give a large dose of castor oil or a saline laxative two hours before operation: a rather commendable practice if it be known positively that operation upon the intestine will not be necessary. And others begin the administration of half a centigram of calomel every hour as soon as the patient recovers consciousness, following it next day with a saline purge or an oxgall enema, or both. In addition to this, when reversed peristalsis becomes alarming, one milligram of eserine salicylate every hour may be given hypodermically four times. And above all, the stomach must be washed out twice daily with normal salt solution.

But—a paralytic condition of the bowel may arise which is not of septic origin: rough handling, prolonged exposure of the intestines to the air, and the prolongation of the intestinal inertia naturally following any extensive intraabdominal operation may be followed by failure of the bowels to move. This paralysis of the intestine is said to be due to inhibition from stimulation of the fibers of the splanchnic nerves, or from overstimulation resulting in fatigue of the ganglia in Auerbach's and Meissner's plexuses. Hence to overcome this paresis of the muscles essential to peristalsis, stimulation of the sympathetic and spinal centers is imperative. Here, then, the injection of the eserine salicylate works more effectively than in septic paralysis; and two milligrams of strychnine sulphate hypodermically, every six hours, must add to its efficiency. The saline laxative, also, is indicated; the

best way to give it being to wash out the stomach with normal salt solution and then pour in two tablespoonfuls of Epsom salt dissolved in as little water as possible, repeating it in four hours. An enema of strong alum water also tends to induce a downward peristaltic wave.

2. When these measures do not result in free movement of the bowels and arrest of vomiting, the condition is a very grave one, because the trouble is either sepsis or due to some mechanical obstruction, the one not to be benefited by secondary operation, the other perhaps curable by early interference. Of the mechanical impediments the most easily rectified is twisting or kinking of the bowel, technically designated *volvulus*. This is easily distinguished clinically from intestinal paralysis, septic or otherwise, by the fact that it (like all the mechanical obstructions) is accompanied by griping. It may be due to kinking in returning bowels to the abdomen or by adhesion of two surfaces of a coil of gut partially or wholly denuded of its serosa. It is most likely to occur in the sigmoid; so, when suspected, copious enemas through a high rectal tube must be given in the hope that the intestine may be straightened. This failing, immediate reopening of the belly and correction of the difficulty is advisable. But—it takes a vast amount of courage to do this, particularly in the face of opposition from the family and the criticism that “something was done wrong.” Yet there should be no delay when the indication seems clear—many lives have been saved by such brave operative work.

3. During operation a hole may be torn in the mesentery, through which a loop of intestine may slip and become attached in some way so as to produce fatal internal hernia; or the intestine may crawl in between the uterus and belly-wall in ventral fixation and be caught with like result. Such condition may, necessarily, be relieved

only by reopening the abdomen and correcting the trouble.

4. Thrombosis of the intestinal vessels is far more common than generally suspected. By reason of faulty technic the mesenteric vessels may be injured in such way that the blood supply of a considerable area of gut is cut off and localized gangrene with fatal perforation follows. Or by tearing adhesions around abscesses, tumors, etc., the operator may, without fault, so injure these vessels that thrombosis follows. On opening the abdomen for this complication there will generally be found a lot of dark-colored fluid (with fecal odor if perforation has already occurred); hence copious irrigation is advisable, one of the few instances in which water is of use in the abdomen. If the general condition of the patient will permit, resection of the bowel should be made—the enterorrhaphy being well beyond the area of possible extension of gangrene—by means of a Murphy button. Generally the condition of the patient is such that extreme haste is imperative; in which case it is best merely to bring the affected loop well out of the abdomen, irrigate the belly, dry it, pack gauze in around the extruded intestine sufficiently tight to prevent more gut from being forced out, then clamp healthy gut above and below the dying portion and cut away all of the necrotic part and a little more, tying the bleeding vessels with fine catgut. The clamp on the upper extremity of the cut intestine may be removed in twenty-four to forty-eight hours and the bowels allowed to move into cotton. If this artificial anus be high in the ileum or jejunum it will be necessary to make a secondary operation within a few days—as soon as the patient is out of immediate danger. The best operation is to invert the ends of the gut, sew them over by at least one row of Lembert sutures (two rows are better on the upper portion

of gut as the point of closure has to withstand the force of the entire fecal stream) and then make a wide lateral anastomosis, the belly to be closed without drainage.

5. Among the causes of failure to act must be mentioned inclusion of a part of the bowel in a ligature or suture. Rarely the rectum has been ligated and cut across by mistake, the error in technic being demonstrable at the postmortem examination; occasionally other portions of the intestine have been similarly mistreated; but most often a needle is thrust through a small section of the sigmoid in ligating the broad ligament or a little of the small intestine is caught in the suture when the peritoneum is being closed. In such cases the bowels have a singular inclination not to move, however much they may be encouraged by enemata and purgatives, even though there is not the slightest leakage at the point of local injury.

Correction of the difficulty by secondary operation is the only treatment; but the patient usually dies even when the source of trouble is removed early. Wounding of the bowel may occur during the separation of adhesions; and unless this is noted at the time and the injury attended to by proper closure of the opening, fatal sepsis may result; or an obstruction of the bowel may seem to be present by reason of nature's arresting peristalsis while adhesions form as an effective barrier against leakage. When such a condition is suspected (as when extensive adhesions have been roughly separated deep in the pelvis) it is far better to keep the patient absolutely quiet by large doses of morphine than to give cathartics, etc., in the vain hope of securing early bowel-movement. When it is known that the bowel is injured, as in removal of the appendix, closure of intestinal wounds, etc., it is best not to try to force peristalsis; rather is it advisable to

give enough opiates to prevent bowel-movement for at least two days—and three are better.

Another surgical interference with peristalsis is too close packing of the pelvis, or sometimes other parts of the peritoneal space: the bowel is pressed between the pack and the hard walls or is caught in the folds of gauze as they are jammed in to control oozing, and a mechanical obstruction of the bowel is produced. Fortunately packing is generally removed within forty-eight hours and the bowels then take care of themselves; but sometimes symptoms of obstruction persist after the tampon is removed and it then becomes necessary to reopen the wound and overcome the difficulty, if possible, by liberation from bands, resection of gut if pressure-necrosis has arisen or formation of an artificial anus as a *dernier ressort*.

Rough handling of the intestines, too, may cause such abrasion of the serosa that the intestine may attach itself to some raw surface and in this way become fixed even if not twisted, and so give rise to serious symptoms of obstruction; for which reason the intestines should be handled in soft gauze pads instead of the hands or retractors, and not subjected to wiping. The obstruction from this source is more likely to be late: probably months after operation—stricture or bands or twist being found when the abdomen is opened.

6. Not infrequently certain conditions existing before operation are not recognized during the excitement of the work and so, uncorrected, lead to obstruction. This is conspicuously the case in adhesions of the gut around the infected areas of an appendicitis; death from obstruction of the bowels occurs quite often in appendicitis operated upon at the height of the inflammatory process, hence the advice to operate during the first forty-eight hours of the disease or else let the case go on until the eighth to tenth day, when the abscess is well walled off and the

conditions such that they can be met without danger of injury to contiguous gut by packing, tearing etc. Adhesions around an inflamed gall-bladder, too, may not be discovered, and a tight packing induce acute angling of the colon or ileum with immediate obstruction. Also, in certain conditions there may be an obstruction (from impacted feces, from inflammatory bands, etc.) just beginning at the time of operation, perhaps the obstruction rather than the disease being productive of the acute symptoms—vomiting, collapse and so on—and the obstruction not being discovered death may follow although the pathological condition for which operation was undertaken may have been perfectly remedied.

Obstruction of the bowels may appear late, after the patient has returned home and is considered perfectly well—strictures, bands, adhesions and scar-contractions causing it. For the prevention of this the experienced abdominal surgeon has learned to cover all denuded points with peritoneum, when possible, even the omentum being stitched over any raw surface which cannot otherwise be protected.

But whatever symptoms of obstruction appear, however late, the wise surgeon opens the belly and corrects the cause at the earliest moment the patient will consent to operative work. Inability to secure bowel-movement, followed by vomiting which changes from merely bile-stained to stercoraceous, and not relieved by gastric lavage, especially if associated with distension of the abdomen and griping, cannot be mistaken; they form a grouping of symptoms invariably meaning mechanical obstruction, and just as certainly indicating immediate operative work. To wait until collapse appears is a crime; it spells death in most cases.

In the possibility of encountering postoperative difficulties such as these lies the incentive to refer patients

to experienced operators rather than subject them to the hands of the "county-seat surgeon." Every such operator should be prepared to open the abdomen in any case of emergency: acute appendical rupture, strangulated hernia, intussusception and even cesarean section; but when it comes to an operation of choice, where the patient can be sent to a good hospital and secure the services of a skilful operator who has (a) become possessed of great anatomical knowledge, (b) who has been taught much pathology, (c) who has spent months assisting some master of abdominal surgery, and (d) who has by the successful management of many hundreds of cases in his own work learned not only to overcome operative difficulties readily but also to carry the patient through the dangerous postoperative days, it is little less than criminal to permit the inexperienced or infrequent operator to open the abdomen. The doctor who will permit some ambitious friend to make the operation "for experience" (unless he has had the advantages already specified) or to gain local prestige as a surgeon is taking dangerous liberties with the life of the patient who has trusted him. Entirely too many bellies are being opened by inexperienced "surgeons."

Preparation for Abdominal Section.—Whenever possible, a good cathartic should be given the day before operation (a saline being preferable) in such quantity that five or six good bowel-movements are secured. On the morning of the day before operation the skin of the entire abdominal wall should be scrubbed and shaved; and a soap poultice applied. In the evening the poultice should be removed, the skin again scrubbed and washed with alcohol, and a bichloride pack (1 in 2000 solution) bound on for the night. This is to be removed after the patient is on the operating table; the skin again scrubbed with soap and water, dried with a sterile towel, washed carefully

with sulphuric ether to remove the fat, then rubbed vigorously with gauze saturated with 65-percent alcohol, and finally rinsed with bichloride solution, 1 in 2000. The field of operation is then to be surrounded with towels just out of the boiler (wrung dry as convenient) held in place by safety-pins which have been boiled with the instruments; and then a sterile towel may be placed temporarily over all while final arrangements (if any) are made.

Unfortunately in many cases it is impossible to make the preliminary preparation, as in accidents, strangulated hernia and the like; in which cases the scrubbing must be done with unusual care.

ABSCESSSES.

Definition.—Technically an abscess is the formation of pus in some cavity of the body, the result of an inflammation, i. e., infection by one of the pyogenic bacteria; but practically the name is applied to any localized accumulation of pus.

Alveolar Abscess.—An abscess in the gums or alveolus must be opened as soon as found, and the mouth kept as clean as possible by frequent washings with dilute hydrogen dioxide or a saturated solution of potassium chlorate in water. If a small spicule of the alveolar process be the cause of the trouble, it should be removed after incision, by a minute curet or by pincers. If due to a decayed root, the offending tooth must be pulled. An antiseptic mouth-wash will soon complete the cure.

Bursal Abscess.—Any of the bursæ may become the seat of an infection with pus-germs, the bursa of the quadriceps extensor being most frequently affected ("house-maid's knee"). If the pus-infected sac has become shut off from the near-by joint by an adhesive inflammation, all that is essential in treatment is free incision, packing with gauze (renewed every two or three days) until the cavity

closes from the bottom, with granulations. If there be a suspicion that the abscess is of tubercular origin, the sac when first opened may be swabbed thoroughly with tincture of iodine, and iodoform gauze used for packing. When the neighboring joint is involved in the suppurative process, only the freest of incision and perfect drainage will save the limb from amputation.

Cerebral Abscess.—Abscess of the brain may follow injury to the head, or it may arise from suppuration, near or far: conspicuously from otitis media. When headache, fever like that of meningitis, oncoming coma and optic neuritis are noticed, the greatest care should be exercised to determine the existence and location of cerebral suppuration, and trephine. Middle-ear disease associated with these symptoms justifies exploratory trephining one inch and a quarter above and an inch behind the meatus externus. The abscess, if found, is evacuated and drained the same as in any other location.

Cold Abscesses.—These develop slowly, without fever or pain—commonly about joints, bones or glands. They are not true abscesses because they are not due to inflammation (i. e., infection with germs of true pus) but are essentially tuberculous (which see).

Fecal Abscesses.—If these form about the rectum from perforation, they may work downward, becoming “ischio-rectal” abscesses (which see). But when they occur from perforation of the gut, higher in its course—as from perforation of Peyer’s patches in typhoid, of the cecum from typhlitis or appendicitis, from tuberculous ulcers anywhere—huge accumulations of pus may result; gallons escaping occasionally when the abdomen is opened. Rarely they are not protected by adhesions to the parietes, being located between adherent coils of intestines and omentum; under these circumstances they are very dangerous and difficult to handle. Usually they may be emptied without

opening the free peritoneum; packing without irrigation sufficing to cure.

Mammary Abscesses.—These form during the progress of an inflammation of the breast. (See “Mastitis.”)

Metastatic Abscesses.—Secondary (so-called “metastatic”) abscesses are those developed at a distance from the seat of primary infection. They are invariably septic, from an infected embolus; often they are multiple and small, called miliary abscesses, prominently noticeable in the lungs. When accessible, they must be incised freely and perfect drainage maintained until they heal by granulation from the bottom.

Pain of Abscesses.—For the relief of the pain of a forming abscess or carbuncle, belladonna is more efficacious than opium. Ichthyol seems also to possess remarkable properties of similar effect. A most excellent prescription is:

Ichthyol	10.0
Extract of belladonna	40.0
Glycerin	50.0

Mix. Smear on flannel abundantly, apply to the sore, and cover with oiled silk, a pad of cotton and a bandage. It may be changed every three or four hours. It is claimed that abscesses can usually be aborted by saturating the patient with nuclein or with the sulphides of arsenic and lime.

Psoas Abscesses.—These are not true abscesses, as a rule, until after they are opened. The contents consist of the *debris* from destruction of a lumbar or a lower dorsal vertebra by tuberculosis, the liquefied matter descending within the sheath of the psoas muscle and “pointing” in Scarpa’s triangle. If opened, they quickly become infected with true pus-microbes and chronic sepsis follows; hence the advice to empty by aspiration (under strictest antiseptic precautions) rather than by incision. Iodoform emulsion is sometimes injected but it is doubtful if it is ever followed

by abatement of any symptom; it certainly cannot reach and affect the source of the trouble.

Spinal Abscesses.—When abscesses form in Pott's disease of the spine the abscesses which contain only tubercular liquefaction should be aspirated. When true pus has formed, aseptic thorough drainage is advisable.

Stitch Abscesses.—Around sutures in an otherwise uninfected wound there may be little points of suppuration: infection from the staphylococcus epidermidis albus of an imperfectly cleaned field of operation. In removing stitches on the eighth to the twelfth day, if any are noted as surrounded by this whitish pus, they must be left until all non-infected ones are taken out, then the clean stitch-holes carefully covered with gauze and the infected sutures cut and withdrawn. The pus must then be gently pressed out and wiped away by gauze. If hydrogen dioxide or other liquid is poured over them the germs will be carried to the other holes and general infection of the wound induced; so it is best just to empty them and apply bi-chloride gauze over the cut. If this be an extensive one it should be supported by a few strips of adhesive plaster over the gauze.

Sometimes in spite of all precautions there is pus-infection of all the stitch-hole openings. These should be enlarged or the cut opened at two or more points to secure drainage. As a rule these wounds do best if simply wiped out carefully with absorbent cotton on a probe or wooden tooth-pick and then covered with dry gauze without rubber or oiled-silk protective. Dusting powders cause retention of the pus under the artificial scab and liquid antiseptics often irritate and retard healing.

Stitch Abscesses from Bacilli Coli Communis.—During an operation for gallstones, cholecystitis, appendicitis, infected ovarian tumor or other condition in which the bacillus coli communis is the causative pathogenic micro-

organism, a trifle of the pus or infected blood-serum or mucus may come in contact with the raw surface of the wound in the abdominal parietes. If the cut be sewed without drainage there may be no rise in temperature, and the operator flatters himself that he has no wound infection. Yet on opening the dressings on the tenth or eleventh day he finds every stitch-hole oozing pus and on separating the margins of the incision at one or two places several drams of pus may be squeezed out. If this is a pure colon-bacillus infection, in addition to the peculiar absence of fever the wound will be found free from the redness and excessive tenderness characteristic of staphylococcus infection. If the pus be pressed out carefully the wound will quickly heal; but if, by carelessness in handling, a staphylococcus infection is engrafted, a long and tedious suppuration may follow, with fever and pain.

Thecal Abscess.—The sheath of a tendon may become the site of an abscess, which is prone to infect the joint through which it passes. The earliest possible evacuation by free incision is the only treatment. Packing with gauze saturated with a solution of equal parts of “gum” camphor and pure phenol seems to prevent extension of inflammation and to promote healing.

Tropical Abscess.—Acute hepatitis ending in the formation of abscess—very frequent in the tropics, hence the name “tropical abscess”—must be treated by early incision and free drainage. Usually this can be done without invading the non-infected peritoneal space, as adhesion between Glisson’s capsule and the parietal serosa has given ample protection. If no adhesions have formed, one of two things may be done: (a) A large opening may be made and several pieces of gauze (each 2 by 6 or 8 inches) packed in between the liver and parietal peritoneum; adhesions forming in two or three days, secondary incision may be made in the liver without danger of peritonitis;

or (b) if the necessity seems urgent for immediate evacuation much gauze may be packed around the proposed opening so as to prevent any pus from escaping into the peritoneal space and the abscess freely opened. When emptied the cavity is to be packed with gauze, held firmly in place by an assistant, the contaminated protective gauze withdrawn and fresh gauze crowded in very tightly in every direction for at least two inches beyond the margins of the abdominal cut. In a few hours, happily before the pus accumulates in the gauze-packing enough to "run over," a protective barrier of adhesions will have formed; but so fragile that the gauze must not be removed before the fourth day.

Tubercular Abscesses.—When an enlarged lymph-gland softens and shows evidence of forming an abscess two plans are open to choice. If scarring is very undesirable the skin may be properly cleaned by scrubbing, application of ether and then washing with alcohol; then a large aspirator-needle thrust into the gland and the broken-down tuberculous material withdrawn; finally about 2 grams, half a teaspoonful, of 10-percent iodoform emulsion injected and the opening closed with collodion and an antiseptic dressing. In most cases, though, the best treatment is to prepare the skin as above, make an opening of a half inch or more, let out the pus (using a knife carefully sterilized) and curet with a surgically clean Volk-mann's spoon; then burn the interior thoroughly with pure phenol, instantly neutralized by pure alcohol; insert a few strands of catgut and cover with a large antiseptic-gauze pad to be left undisturbed for two weeks. If these steps be taken with perfectly clean hands and field of operation and with sterile instruments, healing will be by primary union, with a slight scar only which will not be visible after a year's time. If pus ooze through the dressing or if fever arise after several days, infection with staphylococcus

aureus or albus may be taken for granted and a dressing made—with bad scarring to be feared.

“Washing Out” Abscesses.—The idea that abscesses and infected wounds healing by granulation must be washed out with some antiseptic solution, notably hydrogen dioxide, seems to die hard. If an abscess be freely opened and properly drained by a loose bit of gauze (even the abominable rubber-tube, which so retards healing and helps establish a permanent sinus, is better than nothing) and if an open infected sore be dressed with fresh gauze as often as the old becomes soiled, nature will do all the irrigating needed. It is, of course, desirable to dress a suppurating wound every day, from a financial standpoint, if the patient pay well for each dressing; but surgically the less often a granulating surface is disturbed the better and quicker it will heal. Sometimes an open sore will do better redressed only twice a week; and then the granulations must be disturbed as little as possible—the pus must never be rubbed away. Most wounds do best when sublimate gauze, 1 in 2000, is used.

ACETONURIA.

This has been attracting considerable attention of late because it is claimed that some deaths following inhalation of ether are due to it rather than the anesthetic. Acetone is found in small quantities in the blood and in normal urine, but it is very abundant in certain stages of diabetes, and sometimes follows high fever.

Acid states of the urine are very important in surgery, without doubt; and if urinary analysis prior to operation shows an abnormality (particularly diabetes), there should be great hesitancy about performing operations not absolutely imperative. The dangers of acetonuria, too, should be kept in mind when contemplating operation upon patients suffering from profound mental depres-

sion, especially melancholia, since it has been shown that imperfect oxidation underlies most of the depressed psychoses, like melancholia, and the depressed phases of the compound psychoses; that acetone, diacetic acid and betaoxybutyric acid arise from suboxidization. In epilepsy and parietic dementia, too, there is the same imperfect oxidation; but in diabetes it is, of course, worse.

Therefore, in all such cases before operation careful uranalysis should be the universal rule. The normal degree of urinary acidity is from 30° to 45° ; if it fall below 30° , either there is imperfect production of the acid or imperfect elimination. In the first event imperfect oxidation is present; in the latter, acid-accumulation with all its possibilities is imminent. (Butler.)

In insanity due to head-injury a period of seeming mental quiescence may be followed by attacks of vomiting, purging, semicoma, and return of insanity; the rash surgeon wishes to operate; but—examination shows urinary acidity of as low as 10° ; after subsidence of the acute symptoms, under eliminative treatment, the acidity will increase to 45° ; then operation is safe. The same phenomena have been noted following heat-stroke and severe shocks of electricity; so if operation be indicated after either of these, the urine must be examined, and if found deficient in acidity, postponement is advisable.

Patients presenting acetonuria as a prominent feature after operation pass urine of a marked "fruity" odor (likened by some to the smell of chloroform), cannot be aroused and finally die in coma. This is especially likely to occur after cancer, a disease prone to the formation of excessive quantities of acetone. Bicarbonate of sodium is perhaps the best drug to employ, plus laxatives. In diabetes prompt relief follows a free use of carbohydrates. When acetonuria is recognized hypodermoclysis is advisable, plus pilocarpine hypodermically every six hours.

ACHONDROPLASY.

This is a name given by Parrott to a form of fetal rickets in which the limbs are short and their bones curved where they should be straight, and the natural curves exaggerated, with absence of the proliferating zone of cartilage at the junction of the epiphyses. It is very like fetal cretinism. Fortunately most of such children are born dead. Should they survive, syrup of hypophosphites may be given *ad libitum*. Later, attempts may be made, as in rickets, to correct the deformities.

ACROMEGALIA.

This is a condition (or disease) characterized by an abnormal development of the extremities (bones as well as soft parts) and of the face. It is of long duration—the patient finally dying of exhaustion after ten to twenty years. Virchow claimed it to be hereditary. Nothing is known of its cause; and of therapy there is none except attention to the general health of the individual, tonics and good food prolonging life. Nothing can be done for the deformity.

ACTINOMYCOSIS.

When the actinomycosis bovis—the ray-fungus—by any accident is introduced into the human system, there results a peculiar disease distinguished by the development of a peculiar afebrile inflammation, with or without suppuration, but often giving rise to granulation-tumors. Abscesses about the jaws and teeth are the most frequent and the most curable of its manifestations. Actinomycotic tumors of the neck are very ugly.

In making a diagnosis one must remember that the cases are grouped in four classes: (1) Head and neck actinomycosis, with infection from mouth and pharynx; (2) chest actinomycosis, i. e., infection through the res-

piratory tract; (3) abdominal actinomycosis, with infection probably always through the alimentary canal, possibly through the genital tract in the female; (4) actinomycosis of the skin.

The only treatment of actinomycosis is prompt removal of the affected tissues. When the parasite is located in the liver or stomach-wall no treatment will do any good. Iodide of potassium may be given after operation.

Actinomycosis of Abdomen.—Friederich found that 4 percent of all patients operated on for appendicitis at Greifswald during three years were of actinomycotic origin. Of the eight patients treated by removal of all diseased tissue, the incision extending into the healthy parts, seven are at present in apparent good health. The experience in former cases has been that the condition is liable to recur after two or three years of apparent cure.

Actinomycosis of the Appendix.—Strange to say, actinomycosis may affect the vermiform appendix. The fungus of streptothrix (actinomyces) enters the body by the alimentary canal and may attack the appendix in one of two ways: (a) as a simple streptothrix infection, or (b) as a mixed infection with staphylococci or colon bacilli.

In the first the symptoms closely resemble those of any other appendicitis; in the second form they are much more severe: rigors and septic pyelophlebitis being relatively common, although quite rare in ordinary suppuration about the appendix. The points of value in arriving at a diagnosis of non-suppurating streptothrix infection of the appendix are a long history of slight indefinite pain in the appendical region, the relatively large amount of induration, and if operation is performed, the small quantity of broken-down material. In the suppurating form the early occurrence of rigors and the pointing of abscesses at a distance from the appendix are in favor

of actinomycosis. Early operative treatment in connection with free drainage, with the long administration of large doses of iodide of potassium or arsenic, is advised.

ADENITIS

Adenitis (Tuberculous) Treated by X-Ray.—After a careful analysis of reports, Boggs, of Pittsburg, concludes that in the treatment of tuberculous glands the results obtained by the use of Roentgen rays will compare favorably with those from any other method, as a large proportion of the patients can be (apparently) cured. The treatment usually requires about three months, at the end of which the glands have undergone a degeneration, leaving a hard fibrous nodule, which as a rule, never gives any further trouble. The radiation must necessarily be intense, with the tube placed at least 12 inches from the surface, in order to influence the whole of the diseased area. The important part of the treatment is to have a tube placed the proper distance, giving off rays, rich chemically, and with the proper degree of penetration.

Iodine for Enlarged Glands.—Enlarged lymphatic glands which do not seem inclined to break down into pus may sometimes be made to disappear by the local use of the official iodine ointment (*unguentum iodi*, U. S. P.). When ordered for children who have a very delicate skin it should be diluted one-half with lanolin. It should be applied with gentle friction twice daily. This mode of using iodine is preferable to painting with tincture of iodine for this trouble. But the treatment must be discontinued as soon as it is seen that pus is forming and the glands excised under strictest aseptic precautions, with greatest care that the enveloping tissue (capsule) is not broken into.

Scrofulous Glands.—Under this term the older writers described a peculiar form of adenitis—an enlargement of the lymphatic glands, usually of the neck, with a tendency to become chronic and to develop into “cold abscesses,” i. e., formation of a pus-like material without any local signs of inflammation until after the “abscess” has been discharging for some time. The word “scrofula” has been abandoned—these glands are the site of a tuberculous deposit; the “pus” is but the liquefaction of the caseous product of bacterial action, and “inflammation” occurs only when there is inflammation with true pyogenic microorganisms. If opened under absolute asepsis they heal without inflammation.

Tuberculous Glands.—Whenever a patient will consent, all tuberculous glands should be removed by radical operation; this being notably desirable of enlarged cervical glands. A severe blow may disseminate the tubercle and cause a purely local deposit to give rise to a rapidly fatal general tuberculosis. In the operation both the superficial and the deep lymphatics must be extirpated—a most tedious operation of at least an hour’s work, as the dissection must be perfect and the field under the carotid cleaned out. The aseptic technic must be as free from fault as in the most serious abdominal section. Drainage may be made by inserting several strands of plain catgut to the depths of the wound at two or even three places. The large antiseptic dressing should never be removed until the twelfth day unless something very unusual arises. But if the patient will not submit to operative treatment the enlarged glands may be rubbed, gently, each night with:

Ichthyol.....16 parts

Benzoated lard.....64 parts

Or they may be painted every second day with decolorized tincture of iodine. Internally the best of food is imperative, cream being especially good; if not obtainable, cod-

liver oil may be substituted. Iron and arsenic must be administered in large doses. The tonsils should invariably be inspected and excised if presenting any sign of trouble, as they are often the source of infection.

ADENOIDS

"Adenoid vegetations" is an expression applied to hypertrophy of the glandular tissue normally found in the nasopharynx. When excessively developed this condition leads to mouth-breathing, more or less impairment of hearing, and muffled voice; in the worst cases the open mouth, vacant expression of face and general listlessness are unmistakable to the trained eye. If not corrected, serious mental deficiency may result, as well as enlargement of the tonsils, enuresis and masturbation, with deleterious influence upon the bodily development.

Under chloroform they may be removed by curet or even by the finger-nail. No local medication will do any good. Anesthesia by nitrous oxide or by ethyl bromide answers well for such operations, where only a brief anesthetic period is required.

In cases of only mild degree with but slight enlargement of the tonsils, a weak alkaline solution, such as the following should be syringed through the nose and fauces so as to free the lymphoid tissue, so far as possible, from microorganisms, and to prevent crusts forming upon the surface:

Sodii bicarbonatis.....	0.4 (grs. 6)
Boracis	0.4 (grs. 6)
Sodii chloridi.....	0.2 (grs. 3)
Glycerini.....	4.0 (dr. 1)
Aquæ	30.0 (oz. 1)

Misc. Sig.: Use as a spray freely twice daily.

Astringents, such as the following, may be painted on the tonsils and the adenoid tissue:

Aluminis	0.65 (grs. 10)
Acidi tannici	0.65 (grs. 10)
Glycerini	8.00 (drs. 2)
Aquæ	30.00 (oz. 1)

Or

Iodi	0.13 (grs. 2)
Potassii iodidi.....	0.65 (grs. 10)
Glycerini	30.00 (oz. 1)

Tonics should be administered, such as the phosphate of iron wine. If the patient is no better for the treatment, and the symptoms of enlarged tonsils and adenoids still persist, then these growths should be removed.

ADENOMA

This tumor originates in glandular epithelium and conforms in its histologic structure with glandular tissue. When there is an excessive development of the connective tissue the resultant growth is called an adenofibroma. If it undergo cancerous degeneration it is then designated adenocarcinoma. On account of the danger of this latter change the tumors should be removed early, particularly if they show a tendency to grow rapidly.

AINHUM

In this peculiar disease, practically limited to the negro, one or more of the extremities becomes constricted and undergoes a local gangrene and even spontaneous amputation. The gangrenous spot may be treated simply by protection with an antiseptic dressing so long as it remains practically quiescent, providing the patient will not consent to amputation. Later, if the trouble is seen to be spreading and to threaten the usefulness of the

entire limb, one or more incisions may be made through the constricting bands, the cut being made parallel to the axis of the limb; or the fibrous band may be dissected out in its entirety—one-half being cut away at one operation, the other some weeks later after the first cut has healed.

AMEBIC DYSENTERY

When a case of amebic dysentery is doing badly, i. e., when there is a reasonable amount of strength left but internal treatment is not controlling the dysentery, there should be no delay in operating. The abdomen should be opened as for appendicitis (except that a three- or four-inch cut must be made), the cecum drawn up into the wound and sutured to the parietes—the appendix being removed. Next day the cecum should be widely opened and colonic irrigation with strong solutions of quinine instituted. A rapid improvement usually follows the beginning of irrigation, but convalescence is slow, and at times difficulty is experienced in closing the fistula. The after-treatment (irrigation, etc.) is tedious, and the patients are offensive cases to have in hand; it is very disagreeable thus to treat patients in hospital wards, but it saves lives in selected cases.

AMPUTATIONS

Amputation is the *last* resort of the true surgeon. The indications are: (1) Complete destruction of a part of an extremity; (2) crushing injuries in which the vitality of the part beyond the site of trauma is interfered with by destruction of all nutrient vessels—the skin sometimes being intact yet everything inside crushed to a jelly; (3) extensive burns where it is evident that the extremity even if saved will be perfectly useless; (4) extensive gangrene; (5) cancer of an extremity. Under strict

antisepsis healing by primary union, without a drop of pus, should be obtained.

ANAM ULCER

There is a peculiar ulcer common in the tropics (first noted in Anam): a phagedena which begins as an inflammation at a small abrasion of the skin, most often on the leg or foot, soon followed by deep sloughing of the inflamed area—resulting in a sharp-cut ulcer which slowly enlarges, always preceded by the inflammation. It very obstinately resists treatment.

Fluidextract of lobelia..... 32.0 (1 ounce)

Fluidextract of baptisia..... 32.0 (1 ounce)

Sulphate of zinc..... 32.0 (1 ounce)

Water500.0 (1 pint)

Of this mixture one ounce to the pint of hot water is used in a douche-bag, carefully irrigating once daily. Dress with gauze saturated with a mixture of camphor and phenol, equal parts. Internally iodides or mercury—the trouble often being of syphilitic origin.

ANESTHESIA

Cocaine and Brucine.—The Abbott Alkaloidal Company has prepared a most excellent mixture of cocaine and brucine for local anesthesia, possessing distinct advantages over cocaine alone.

Cocaine by Cataphoresis.—Some patients object strenuously to the use of the hypodermic syringe. When it is desired to operate under cocaine anesthesia upon such a “crank,” the cocaine may be introduced by cataphoresis. A piece of gauze is folded to four thicknesses and cut the size of the part to be analgesized; the skin, sterilized, is covered with this gauze saturated in cocaine solution of the strength of 10 percent, i. e., about 45 grains to the ounce of water; this is covered with lead-

foil cut the same size; then the positive pole of a galvanic battery is applied to this—the patient holding the wet sponge electrode of the negative pole in his hand. A battery of twenty or thirty cells is necessary, and the current used as strong as the patient can stand it. From fifteen to thirty minutes is required for deep cocainization; the gauze being resaturated about every five minutes, it being poured under the foil by raising the edges first on one side and then the other, thus not breaking the current. If desired, one dram of 1 in 1000 solution of adrenalin solution may be added to the ounce of cocaine solution, to prevent bleeding from the part to be incised; the only objection being that oozing is apt to occur an hour or so after the suturing is completed and the wound dressed.

Cocaine Hypodermically.—Either a 2-percent or a 4-percent solution may be used. A half-grain tablet dissolved in a full hypodermic of water (25 minims) give a 4-percent solution. More than one such injection should rarely be used. If more is required, on account of the large area to be cut, it is better to dilute to a 2-percent solution.

In about one case in ten some symptoms of poisoning will follow the injection of cocaine for surgical purposes. Ordinarily the patient will merely complain of a little faintness, and dilation of pupils occurs. But, rarely, especially when only a 2-percent solution has been injected into the tongue, alarming symptoms arise: faintness even to complete syncope, nausea, and vomiting, temporary blindness with excessive mydriasis, coldness and clamminess of the skin, with almost imperceptible pulse; even epileptiform convulsions have been reported. But no death will follow! So the proper treatment is to give the patient a “good drink” of whisky, place him in the recumbent position and go on with the operative work. By the time the operation is finished most of the unpleasant symptoms will have

disappeared; and in an hour or so the patient will be as well as ever.

Cocaine on Mucous Membranes.—Cocaine applied to the surface of the mucous membrane of the mouth, throat, urethra and nose gives a perfect surgical analgesia; but on the perpuce and glans and in the rectum and vagina it will not do so, hence in operating upon any of these parts the cocaine must be injected into the submucous cellular tissue. Operation is usually begun too soon after injection—at least two full minutes should pass before the mucous membrane is cut. The analgesia persists from twenty minutes to a half hour.

“Combined” Anesthetics. [A. C. E. Mixture].—The A. C. E. mixture was formerly much employed. It consists of

Alcohol	1 part
Chloroform	2 parts
Ether	3 parts

It has been almost abandoned since the discovery that its use results in practically a straight chloroform-anesthesia.

Ether by the Drop Method.—Recently it has been demonstrated that ether may be given in the same way that modern men have given chloroform: with a dropper and an Esmarch mask. The ether is poured on much more freely than the chloroform, is kept constantly dropping (no setting down of the bottle under any circumstances) and is varied from one part of the mask to the other so that none shall run through. It requires fully fifteen minutes to secure complete surgical anesthesia, but the effect is much more satisfactory than from any other method thus far devised. Instead of the wild fighting of the old “suffocation” mode of administration the patient sinks tranquilly into unconsciousness; instead of a pound or two of ether being used a few ounces suf-

fice; instead of the intense nausea and vomiting of the old way there is but slight stomachic disturbance, since very little of the ether is swallowed to irritate the gastric mucous membrane.

Ethyl Chloride.—This anesthetic is now being produced so cheaply that it bids fair to become extremely popular for minor surgery. In the peculiar bottles in which it comes it is volatilized by the heat of one's hand so that when the lever is pressed, which opens a tiny hole in the stopper, a fine spray is produced, scarcely visible. As the ethyl chloride boils at 13°C ., an intense cold is produced by the rapid evaporation—to such a degree that the skin against which it is directed for one minute is frozen and in a few seconds more is covered by a fine frost. A surface a half inch wide and as much as two inches long may be frozen readily by rapidly moving the spray up and down the length of the proposed incision. The tip of the injector should be held from three to five inches away from the skin to get the best spray. Incision may be made through the frost or one may wait until it is melted; the analgesia lasting about two minutes.

It is ideal for opening abscesses, removing small tumors or for the use of the Paquelin cautery on small epithelial growths. Recently it has been used by inhalation as a substitute for ether, the anesthesia being produced more quickly, thus saving an average of some twelve minutes on each operation; hence it is likely to prove useful on the battlefield and in other calamities when a number of operations must be performed rapidly, one after another. Its chief danger seems to be the production of pneumonia from cold vapor.

How to Give Chloroform.—So few doctors, even recent graduates who have served as internes in the great hospitals, know how to give chloroform properly (i. e., safely), that the following should be read at least *twice*

by every doctor; and once again by him who thinks *he* knows how! It is the method which has proven safest as demonstrated in many thousands of anesthetics; violation of the rules is what leads to the occasional death of a patient.

There are four chief things to be constantly borne in mind by the anesthetist:

1. To watch the patient, not the operator.
2. To keep an eagle eye upon the respiration; the pulse is of only secondary importance.
3. To begin administration quietly and slowly; more than ninety percent of all deaths occur during the first few inhalations of the vapor.
4. To carry the patient quickly to profound anesthesia, and then keep him unconscious with the slightest possible amount of chloroform.

Apparatus to be Used

The only safe way to give chloroform is by means of a dropper and an Esmarch inhaler, or some modification of the same.

a. *The Bottle*.—Any bottle will do which has a mouth small enough to fit the cork; but it should never be more than half full at the time of using. The 100-gram bottle in which chloroform now is sold is the best.

b. *The Dropper*.—With the regular Esmarch apparatus there comes a cork with metal dropper.

There are two objections to this dropper: (1) It allows chloroform to escape too freely, particularly at a moment when but little is desired, and (2) often it is not at hand when wanted.

A far more satisfactory dropper can be manufactured at the bedside in two minutes with a sharp knife, a cork and a little bit of cotton. A cork which fits the neck of the bottle to be used is grooved from end to end on two

sides, the groove being made less than a sixteenth of an inch deep; a little of the cotton is laid in one groove so that it extends beyond each end of the cork, and the cork and cotton are inserted snugly in the bottle half filled

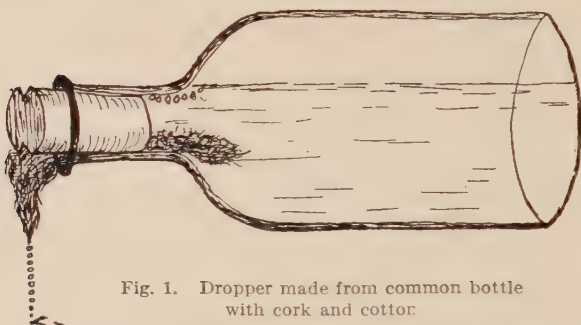


Fig. 1. Dropper made from common bottle with cork and cotton

with chloroform. When turned from the upright to the horizontal, this dropper will give down chloroform in minute drops, about one-fourth the size of those from the Esmarch.

c. The Mask.—Two thicknesses of gauze stretched over a wire frame constitute the receiver of the chloroform.



Fig. 2. Cork cut to make a dropper

It must not be permitted to touch the face until the patient is profoundly asleep; then it may be allowed to rest gently over the nose and mouth.

Cotton should never be put in the concavity of this mask, nor should more than four thicknesses of gauze be used—patients must have at least 95 percent of air (i. e., never more than 5 percent of chloroform vapor) at any stage of an anesthesia.

When a mask is not at hand, one may be improvised very effectively by taking a towel, stiff with starch, if

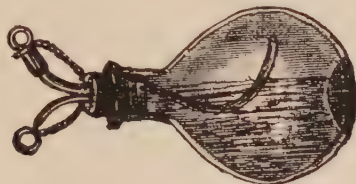


Fig. 3. Patent drop-bottle

possible, and making a cup-shaped "pucker" in one side of it, as shown in the cut.

This may be placed over the patient's mouth and nose and the chloroform dropped upon it.

Method of Administration

The patient being in the position desired for operation is told to close the eyes and go quietly to sleep. *He should never be told to breathe deeply.* Nor should he be



Fig. 4. Esmarch inhaler

requested to count—both tend to excite the patient's fears and disturb his tranquillity. The only directions should be: "Try to go to sleep," "keep your eyes closed," and "don't mind the smell at the beginning." Especial care should be used not to say, "Don't mind the smothering sensation"—that is sure to cause anxiety; and it is fear which kills at the beginning of anesthesia. The eyes should be covered by a towel.

The mask being placed over the nose, two or three inspirations should be permitted without any chloroform; then a single drop—or two, never more—is allowed to fall on the top of the mask and the patient asked pleasantly if he likes the smell, with the assurance that the chloroform will not be given too strong. After two or three inhalations of this very mild vapor, five or ten drops are to be poured on and the mask slowly lowered to within a half inch of the face; when the patient has breathed this stronger vapor, three or four times the amount may be quite rapidly increased, so that within two minutes after

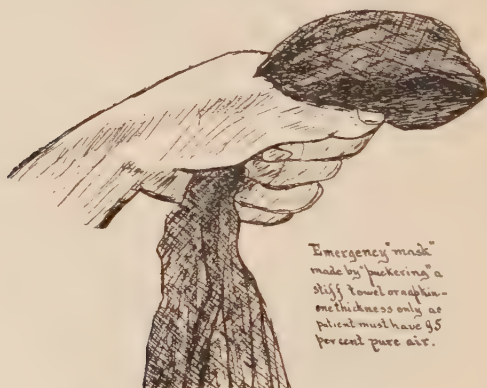


Fig. 5. Emergency mask

beginning the anesthesia its administration should be under full headway if the patient behave properly; if he be excitable, a little longer may be required. At the end of two or three minutes the rate of dropping should be about *two per second*, the drops being made to fall in a circle near the margin of the mask. *There should be no intermission in this dropping* (if the patient be breathing regularly and easily) *until the patient is fully under the influence*. The man who stops to set the bottle down on the table, before the patient is unconscious, is a dan-

gerous anesthetist—the only exception being when the patient does not breathe well.

At a certain point in the process of anesthetization (where the “stage of excitement” is said to begin) the patient is very apt to hold his breath, and the inexperienced anesthetist becomes uneasy or even alarmed; but all that is necessary to do is to remove the mask, *gently* press on the lower end of the sternum, with the sharp command, “Go on breathing,” and allow two or three breaths of air; then as soon as respiration is regular go on with the dropping. If any time is lost at this point the patient may become very much excited (especially if addicted to alcohol), but if just enough chloroform be given, the “stage of excitement” may usually be entirely avoided.

After a few more breaths the patient may try to vomit, but unless something actually comes up into the throat (in which case the latter must be quickly cleaned out) no attention need be paid to this, as a few more drops of chloroform will put a stop to it.

In three minutes a quiet patient should be put into perfect surgical anesthesia; an excitable one inside of five. The doctor who requires ten to fifteen minutes to chloroform a patient is not a safe anesthetist.

As soon as the operation is begun the amount of chloroform may be diminished; the pulse examined, so determining that the heart is right; and the pupil looked at to see if it be properly contracted. At an early stage of chloroform inhalation the pupil becomes dilated for a minute or two, but as soon as anesthesia is complete it is contracted slightly beyond normal and should remain so to the end; secondary dilation means too much chloroform—so the pupil should be frequently inspected during the later stages of the work. *But no man should stick his finger in the eye to see if the conjunctival reflex is abolished,*

During the progress of the work from five to twenty drops per minute will be required to keep the patient asleep. As there are rather more than 120 drops to the fluid dram, about one ounce should suffice for a full hour's profound anesthesia; and some patients require less than half this amount; if two doses of hyoscine-morphine-cactin compound have been given before operation, one dram will be an abundance. Just enough should be used to keep the patient from moving; he should never be permitted to wake up enough to feel the pain.

Accidents: How to Handle Them

1. The most common accident is "swallowing the tongue." When this occurs (always after complete anesthesia), bottle and mask must be laid aside and the chin of the patient raised by placing a thumb on each side of the face above the angle of the jaw and three fingers on the neck below the angle, when by pulling upward and forward the larynx will be straightened and the tongue drawn forward out of the pharynx. *The man who wants to use a tongue-forceps is one never worthy of trust as an anesthetist.* In extreme cases a finger wrapped with gauze may have to be inserted into the throat to unroll the tongue; but it should not be once in a thousand cases; in all others elevation of the jaw is all that is required.

2. Cessation of respiration is the most dangerous of all accidents. If too much chloroform be given, the patient turns livid (from imperfect oxidization of the blood) and finally he ceases breathing. Artificial respiration must at once be instituted, and if voluntary respiration is not begun within two or three minutes, the head should be lowered and the angle of the jaw raised again while artificial breathing is continued. Usually respiration will be restored in a minute or two, though sometimes ten to twenty are required; and as much as forty have been required in

extreme cases. So in fatal cases not less than an hour's work is permissible. As soon as respirations are regular and the color is good a small amount of chloroform may be given, but usually only a little will be required.

3. Vomiting is sometimes troublesome if the patient has eaten within eight hours of the operation. When the stomach-contents come up into the throat the head should be turned to one side to permit ejection, and the chloroform stopped for a moment until the throat can be cleared. A piece of gauze or corner of a soft towel may be used to wipe out the mouth and even the pharynx when necessary. As soon as two or three full breaths have been taken by the patient, dropping should be resumed.

4. Heart-failure is an accident not likely to occur if the respiration continues good, unless there has been excessive loss of blood or prolonged exposure of viscera. When the pulse becomes weak or wavers greatly an injection of a pint of normal salt solution (a teaspoonful of salt to the quart of water, boiled and allowed to cool) should be made into each breast or each buttock. While this is being done, 1-100 grain of glonoin (nitroglycerin) should be injected in the arm or neck; or if death seems dangerously near, three or four syringefuls of ether may be injected—but never unless the situation is urgent. The salt solution does best. Of course the anesthetic is to be discontinued during these manipulations.

How to Give Ether.—A piece of rubber-tissue is placed over the patient's eyes; or in its absence a few layers of moist gauze may be used, to shield the eyes from the irritating vapor of ether. Over this a moist towel is laid and wrapped carefully around the chin and head in such way that only the nose is exposed.

Preferably the apparatus used is a wire frame very much like the Esmarch chloroform inhaler, made larger in

order to give more space under the inhaler for the mixture of air and ether; and the outline of the mask curved to fit the face closely. If this special mask is not at hand the regular chloroform-inhaler mask will do. The wire frame should be covered with one or two layers of stockinette or gauze. The air space under the frame must contain about 25 cubic inches, that is, about three times more than the ordinary Esmarch's inhaler. The best covering is about six layers of gauze, which can be quickly applied and thrown away after being used. The wire frame should be boiled immediately after use. When everything is ready for beginning anesthesia the mask is laid over the patient's nose and a few drops of ether allowed to flow on it. The patient usually complains of the smell or jerks the head from side to side, but this nervousness disappears in a moment or two if assurance is given in a firm tone that everything is all right and that the bad smell will pass away. At first the dropping must be very slow; then as the patient becomes accustomed to the vapor the amount is rapidly increased until a very fine stream is being projected constantly through the "dropper" in the can, the same dropper being used that is made for chloroform.

As soon as sleep is so deep that the patient will not respond to questions a moist towel or gauze should be wrapped snugly around the mask, leaving a small area in the center for the free passage of air through the gauze. By this method the air is prevented from escaping around the edges of the mask and is made to pass through the ether-laden gauze.

The ether should not be at any time dropped on faster than the patient can comfortably breathe it in.

Patients should preferably be anesthetized on the operating-table. Such as are too nervous to be taken to the operating-room can be put on the carriage in the anesthetizing-room and rolled into the operating-room after the

anesthetic has taken effect. The anesthetizing-room should be kept absolutely quiet, because all sounds are very much magnified to a patient who is about to pass into the second stage of anesthesia.

Above all things, the anesthetist should not let an impatient operator worry or hurry him on, but remember that the welfare of the patient depends upon the slow and gradual ratio of the increasing concentration of the ether-vapor.

The patient will become unconscious in two or three minutes and should be ready for the operator in about ten minutes.

When a patient has become thoroughly anesthetized very little ether dropped slowly but continually will suffice to maintain the proper condition.

Hyoscine-Morphine-Cactin Compound.—In view of the facts: (1) that there is at present a most lively interest in hypodermic anesthesia; (2) that it seems demonstrable that a perfect surgical anesthesia may be produced safely by a certain combination containing chemically pure hyoscine; (3) that an impure "scopolamine" upon the market produces death or very alarming symptoms, and (4) that certain pharmacologists are claiming that scopolamine and hyoscine are identical and that the so-called "Abbott-Lanphear anesthesia" is therefore dangerous, it seems to me that a careful analysis of the facts, together with a few words of warning, should be of interest to the profession.

The following are the chief points of import:

1. That "scopolamine" made from *scopola atropoides* is an unreliable and sometimes dangerous drug.
2. That "hyoscine" made from henbane is not, therapeutically, identical with the "scopolamine" of commerce, even though it be named "hyoscine," as much of the commercial *scopola*-derived drug is.

3. That a proper mixture of chemically pure (true) hyoscine, morphine and cactin is a safe, cheap and efficient substitute for chloroform and ether for surgical anesthesia and for painless confinement; and as an analgesic is far superior to the usual morphine-atropine combination.

1. Relative to the first proposition I said in my first contribution to the literature of this subject that the scopolamine used by some manufacturers of hypodermic tablets is (1) often unreliable and (2) sometimes dangerous—that “fifteen or more deaths have been reported from its use—and hence it has been abandoned by most operators; besides its danger, it has been found to be unreliable, Merck saying that only scopolamine of -20° optical rotation is safe and serviceable, while much in the market is as low as -2° , being practically valueless.” And W. C. Abbott, of Chicago, in *The International Journal of Surgery*, February, 1906, pointed out the same thing.

H. C. Wood, Jr., of Philadelphia, analyzed the reported fatalities (mostly foreign) from the use of commercial scopolamine and morphine, and in an article in *American Medicine*, December, 1906, concludes that of the deaths recorded at least nine were directly traceable to the scopolamine-morphine used to induce anesthesia.

But his assertion that therefore only ignorant surgeons will continue to use a hyoscine-morphine combination to produce surgical anesthesia is based upon his assumption that scopolamine (or *socalled* “hyoscine”) made from scopola atropoides is identical with hyoscine prepared from hyoscyamus niger, because certain manufacturers so declare and the United States Pharmacopeia states that hyoscine and (pure) scopolamine have the same chemical formula.

I believe all investigators agree that scopolamine as found in the market is usually unreliable and sometimes, in fact often, dangerous.

2. To substantiate, if possible, that which I felt sure I had clearly demonstrated, experimentally: that chemically pure hyoscine made from henbane is not, therapeutically—and possibly not chemically—the same as scopolamine (or so-called “hyoscine” from scopola), I wrote to the leading manufacturers of hypodermic tablets in the United States, submitting certain questions for answer. As a result of this correspondence it may be said:

(a) That much of the “scopolamine” bought by certain commercial manufacturers is impure, of low rotatory power, and unreliable;

(b) That some of the “scopolamine” is dangerous from admixture with apoa tropine;

(c) That some “hyoscine” tablets are simply “scopolamine”—which may or may not be dangerous on the one hand or unreliable on the other;

(d) That there is obtainable a chemically pure hyoscine made from hyoscyamus, of not less than -20° optical rotation, free from apoa tropine, atroscine, etc.; and

(e) That this hyoscine differs therapeutically from most of the “scopolamine” sold in this country, the former being perfectly reliable and apparently safe.

Directly bearing upon this second proposition is the following from a letter written by Messrs. Merck & Co.: “Hyoscine hydrobromide and scopolamine hydrobromide are identical, that is, the *absolutely pure* alkaloids are identical; but impurities vary, naturally, as the two are made from two different plants—though there *should* be no impurities if they are properly prepared. Chemically pure scopolamine is a safe remedy in doses of 1-100 grain, and is therapeutically active if close to -20° . There are, however, inferior products on the market; the *most important one of these as to sales* [italics mine] has a rotatory power of only -2° . Such a product must contain impurities, such as atroscine.”

John Wyeth & Bro. write: "Mr. Louis Merck, of the firm of Merck & Co., Darmstadt, Germany, the leading manufacturers of alkaloidal salts, states in a paper published in *The American Journal of Pharmacy* that the hyoscine put upon the market by his firm has been and is identical in chemical formula with scopolamine, but the firm retains the name hyoscine for the alkaloid from *hyoscyamus*, and scopolamine for the alkaloid from *Scopola atropoides*.

"Nevertheless, despite this apparent identity, it seems to be pretty safely established that these two substances differ materially in their therapeutic action. This is no doubt due to the fact that the commercial scopolamine hydrobromide contains, as a rule, a varying admixture of another scopola alkaloid. Owing to the presence of this alkaloid, commercial scopolamine has, as a rule, a much lower rotatory power than the salt prepared from henbane (hyoscyamus niger); and Schmidt concludes, from the fact, since scopolamine may be obtained with normal or with feeble rotatory power, according to the mode of operating on scopola, that the inactive scopolamine does not exist naturally in the root but is formed in the course of extraction. The admixture of varying proportions of atropine in commercial scopolamine is evidenced by the varying melting point of the latter, which ranges all the way from 178° to 190° C.

"We answer your specific questions as follows: (1) Is hyoscine hydrobromide therapeutically the same as scopolamine? Answer: No. (2) Is the optical rotation of hyoscine variable from -20° to -2° , as is scopolamine? Answer: No. (3) Is commercial scopolamine a safe remedy in doses of 1-100 grain or does it contain atropine, apoatropine or other impurities which render it dangerous? Answer: Not as safe as hyoscine, owing to the varying proportion of atropine, etc., present. (4) Does hyoscine

hydrobromide as employed by you for making hypodermic tablets contain any impurities which make it a dangerous remedy in doses of 1-100 grain, every hour, three times? Answer: We have been using for years hyoscine hydrobromide made by one of the most reliable manufacturers in the world, and despite the fact that we have been selling these tablets in large quantities for a good many years, we have never had any complaint of their causing any untoward effects."

Upon this question Sharp & Dohme write interestingly: "There are two kinds of this product (scopolamine) upon the market, one optically active, with an optical rotation to the left varying from -20 to -2 degrees, and the other optically inactive. The melting point of these two is different, the inactive melting at 179.7°C. and the active melting at 191.6°C. The optically active preparation is the preferable one, although the manufacturers of the other *claim* that both are equally efficient therapeutically. But Kobert has shown that apoaotropine sometimes is present, and when it is so, the optical rotation is greatly reduced; *and apoaotropine is responsible for the bad after-effects*. If it is levorotatory less than 10 degrees it would indicate that it is mixed with some apoaotropine. We use, in making our hypodermic tablets, a hyoscine hydrobromide in which the alkaloid possesses a distinct levorotatory action upon polarized light only."

Eli Lilly & Co. write practically in substantiation of these facts, as do also G. F. Harvey & Co., and Nelson, Baker & Co. (who, however, state that they supply the alkaloid of scopola—scopolamine—whenever hyoscine is ordered, but so inform the purchaser). Mallinckrodt Chemical Works make their "hyoscine" as well as "scopolamine" from scopola—in which they are fortified by permission of the U. S. P. John T. Milliken & Co. declined to answer. Parke, Davis & Co. ignored the request for

information, simply referring me to the misleading and wholly unreliable matter in *The Journal of the American Medical Association*.

The Abbott Alkaloidal Company use only chemically pure hyoscine derived from hyoscyamus, -20 degrees rotation, and label the tablets made from the alkaloid of scopola "scopolamine."

Dr. Abbott's position is well known: that only pure hyoscine hydrobromide should be employed for making this anesthetic tablet; and that if scopolamine be substituted, it should be with a full understanding that by reason of one impurity or another it may be either unreliable or dangerous—a danger for which the surgeon himself must be held responsible, since he can easily secure pure hyoscine instead.

3. As to the third proposition, there is much to be said. After exhaustive experimentation the formula decided upon by Dr. Abbott and adopted and extensively used by myself is:

Chemically pure hyoscine hydrobromide, 1-100 grain.

Chemically pure morphine hydrobromide, 1-4 grain.

Cactin (from cactus grandiflorus), 1-67 grain.

Dosage.—For small operations, like repair of lacerated cervix, appendectomy, removal of gallstones, resection of the bowel, etc.: one tablet to be injected into the arm two hours before operation; a second, a half hour before operation; twenty to forty drops of chloroform at beginning of operation or a little cocaine locally.

For huge operations, like abdominal hysterectomy, trephining, Kraske operation, amputation of thigh, etc.: one tablet hypodermically three hours before operation; a second an hour and a half later, and a third when the patient is put upon the table. By the time preparations are completed, hypnotic anesthesia usually will be profound. Robust male patients may require a few drops of

chloroform by inhalation—from one-half to one dram sufficing for three or four hours' work; but quite often no chloroform is needed.

The third dose, of course, is not to be given if two have produced the desired effect.

Safety.—This formula *seems* to be perfectly safe. I have now used it (July 15, '07) in fully 400 capital operations without an alarming symptom; and I have reports from others of more than 3000 cases without an accident of any kind. Judging from my own experience and that of others thus far reported it appears (when properly handled) to be absolutely safe *if chemically pure agents are employed*, just as chloroform is safe only when free from impurities and used with judgment.

If left undisturbed, soon after the first injection the patient sinks into a tranquil sleep; a few minutes after the second one almost total unconsciousness is noted—always the individual is brought into the operating room free from anxiety and excitement. If the patient is anxious it is well to insure a good night's sleep and consequent tranquility by using a night-cap dose the night before, when rarely are more than two tablets required for the operation. The avoidance of the autotoxemia of excitement and fear no doubt plays an important part in securing the excellent after-effects following the use of this anesthetic.

Apparently from the cactin, Abbott (hence essential in the combination), the pulse is increased to 90 or 100 or more, and is full and strong, even though the patient may have been brought into hospital suffering from shock.

The respirations sink to about 15, to 12 or 8 or even 6 per minute (practically the same as in deep, normal slumber), but the color remains good.

The reflexes are not abolished, nor is the pupil inactive to light. If found dilated after the second dose, plain morphine should be employed for the third (if needed)—there-

after a few drops of chloroform will usually suffice to complete the anesthesia.

The skin of hard drinkers may become quite mottled.

While the patient is not, as a rule, profoundly unconscious, the analgesia from two doses is sufficient to permit most operations like curettage, perineorrhaphy, hernia, resection of rib, etc. The patient may make a little complaint on cutting the skin or pulling on the peritoneum, but with the use of a few drops of chloroform—sometimes none—hysterectomy or gallstone operations may be done readily, or, with a little cocaine for the skin, extensive resection of the bowel, appendectomy, etc.

Under three full doses (an hour or an hour and a half apart), the last a half hour before cutting, the most extensive and prolonged operations may be performed: amputation of the thigh, trephining, excision of the mammary gland and axillary contents, removal of the superior maxilla, abdominal hysterectomy, Kraske's operation of removal of the rectum, Schede's operation of excision of chest-wall, nephrectomy and thyroidectomy being some of the operations I have made without the use of a drop of chloroform.

Respiratory Failure.—Among possible dangers cessation of respiration would seem to be most likely to occur. Practically I have never seen any trouble, except in one case where a fat woman's tongue dropped into the pharynx—and withdrawal of the tongue promptly relieved it. During operative work the respirations generally come up to the normal; after operation, if they should drop below six per minute, very strong coffee might be given by rectum, and strychnine administered: 1-15th grain hypodermically. Or by shaking his shoulder with sharp command, the patient may, from time to time, be made to breathe voluntarily. However, in no case thus far recorded has there been the slightest alarm (even in back-woods farm houses,

with inexperienced nurses in charge, as much of my work has been) as to respiratory paralysis.

Anuria.—*Suppression of urine is one of the greatest dangers from an impure scopolamine.* Dr. G. M. Phillips, Professor of Genitourinary Surgery in Barnes University, St. Louis, has had two deaths from “scopolamine-morphine” anesthesia, and Dr. J. C. Murphy, Professor of Obstetrics in the St. Louis College of Physicians and Surgeons, one—all three from anuria following the use of so-called “hyoscine” tablets prepared by the firm alluded to by Merck as the heaviest purchasers of “hyoscine” (*scopolamine*) made from *scopola atropoides* and therefore likely to contain *apoptropine*, etc.—their basis for choice being, apparently, price only.

In the treatment of anuria the sulphate of sparteine in doses of one or two grains hypodermically every three or four hours has been found most effective by Stuart McGuire of Richmond. Its action is manifested within thirty minutes. With it should be used hypodermoclysis: one liter of salt solution to be injected into the cellular tissue of the breast or buttock and repeated in three or four hours.

Probably it is best not to use this form of anesthesia when there is decided nephritis.

Heart Failure.—Thus far there has never been any indication of failure of heart-action, although warning has been given by Abbott and others that there might be trouble in case of serious organic heart lesions. Abbott's addition of cactin seems to have settled this. Several of my patients have had mitral insufficiency, but the cardiac rhythm has been improved rather than made worse by its use. Tablets made with digitalin instead of cactin have not been nearly as satisfactory as those after the regular formula. The suggestion to add atropine, ignorantly made by some, is the sheerest folly.

Remote effects are conspicuous by their absence.

There is no nausea or vomiting in most instances—a distinct advantage in abdominal surgery which every surgeon will appreciate.

There is no constipation—generally the bowels move spontaneously the day after operation and the tongue cleans.

Rarely there is slight, transitory delirium following its use, especially noted when strychnine is given. It is of not the slightest consequence.

A few patients have slept too long to suit their friends, and most doctors also fear too long a slumber. Nearly always the patient is wide-awake, even after three full doses, within one or two hours after being returned to bed. The longer the patient sleeps the better, eight to twelve hours being desirable. Some women sleep most of the time for twenty-four hours, waking, or being easily awakened for taking necessary drink and food, urinating, etc.

A conspicuous feature after the operation is the freedom from pain. After the most extensive and severe operations patients are perfectly comfortable during the hours usually so full of suffering and restlessness—hours so trying, so exhausting.

Severe thirst is also absent unless there has been serious hemorrhage, and much earlier than after any other anesthetic the patient may have both food and drink.

Shock is practically eliminated save from loss of blood or long exposure of viscera. Use of this anesthetic demonstrates that much of what we have heretofore called “shock” is the effect of too much chloroform or ether.

Age-Limit.—It should not be used in very young children (who bear morphine badly) nor in the extremely old. I have given it to patients 70 years of age, without fear, but on the other hand, I have declined to give it to those

of not over the age of 60 who had atheromatous vessels and other marked evidences of old age.

Its Use in Labor-Cases.—Its field of usefulness in labor would seem to be almost unlimited—for under two or three doses delivery may be rendered practically painless and the most severe obstetrical operation can be performed without the knowledge of the mother. Even half-doses will do in many cases, the patient being delivered painlessly without losing consciousness.

It does not seriously interfere with uterine contractions: the action of the combination of hyoscine and morphine upon the involuntary muscles being practically *nil*; contrary to our experience with anesthetic inhalants, under profound anesthesia the pupillary reflex is present, peristalsis continues, etc. If, at the beginning of the first stage, one gram (15 grains) of quinine be given, labor will progress even during total unconsciousness. If it is delayed in the second stage, the forceps should be used.

In labor good judgment should be exercised. If a single pronounced effect is desired, one full dose may be given; but if prolonged effect is essential, half the dose early and repeated in one or two hours is perhaps better.

So far as noted in the numerous cases reported it does not affect the fetus in any undesirable way, except that there is perhaps a little more than the usual amount of trouble in making the child breathe; but no fatalities have been recorded traceable to the use of the anesthetic.

It is best to give it only after the os is dilated so far as to admit two fingers, though in prolonged "first stage" it may be given at any time the patient begins to complain bitterly. In an hour and a half, if needed, a second dose may be injected; and a half hour later, unless the patient is unusually nervous, forceps-delivery may be made and the perineum repaired without the knowledge of the patient.

Occasionally a third dose may be necessary in contracted pelvis or for cesarean section. It should never be given sooner than three hours after the first dose, i. e., one and a half hours after the second.

In Emergency Surgery

Its value in emergency work can scarcely be overestimated. In a serious calamity where many are involved and help is scarce (as in railroad accidents, explosions, huge fires, etc.) it is of the utmost utility. Every hospital, every emergency-surgeon, every ambulance-man should be supplied, as should also every army-surgeon, whether in division-hospital, in the field-hospital or on the firing-line; the possible diminution of human suffering by use of this hypnotic-analgesic-anesthetic combination is beyond estimation. It relieves pain, reduces shock and puts the patient in best possible condition for a general anesthetic if a third dose be deemed inadvisable.

To those who are afraid or skeptical the following advice is given:

One hour before a serious operation administer one tablet; see how little chloroform will be required and how little postoperative suffering there will be.

After a few trials, give one dose two hours before and a second dose half an hour before operation; see how few (especially women) will require any chloroform at all.

And, finally, when accustomed to its effects, try the third dose, as directed, in appropriate cases.

Statistical

Reports were solicited from physicians known to be employing the hyoscine-morphine-cactin anesthesia in their surgical and obstetrical practice, and their replies were tabulated in my paper as it originally appeared in *The American Journal of Clinical Medicine*. Briefly recapitulated the facts are as follows:

Altogether 311 answers were received, reporting on a total of 2432 cases. Of these, 134 fail to give the number of cases in which it was used. The other 177 have employed it in 665 labors and in 1,767 surgical operations—without any serious mishap, and but 8 failures! Some of the failures were unquestionably due to faulty technic. The trouble in securing good respiration in the newly-born was produced by too large dosage—semihypnosis being best for confinements: memory of “pains” is totally obliterated in most cases from half the dosage necessary for surgical work.

My opinion is that ultimately this combination will be used most extensively for partial anesthesia—total unconsciousness being induced by a trifling amount of chloroform by inhalation; the full analgesic effect of three doses being reserved chiefly for those cases in which for any reason it would be injudicious to use chloroform or ether. But in my own work I am using it for practically all major operations—the narcosis is entirely too profound for minor surgery (although the supplemental one-dose method works well); and I am sure that others who try it carefully, in appropriate cases, will become as enthusiastic as I am, on account of (a) its simplicity, (b) its freedom from post-operative nausea and pain, (c) its economy and (d) its attractiveness to patients who so greatly dread either chloroform or ether.

Precautions

Certain precautions are essential:

1. The hyoscine must be free from atropine and apotropine, especially the latter, since contamination with these antagonizes the effect sought—hence the hyoscine hydrobromide used must be from a reliable manufacturer; and there must be no thebaine or atropine in the morphine.

2. Silence must be preserved in the operating room; otherwise the patient becomes restless, and finally wide-awake and excited. Stop ears with cotton.

3. It should not be used in the very young or in those of extreme old age. Possibly it may be of danger in serious heart-lesions. Abbott says it should not be given to those suffering from far-advanced nephritis.

4. If the patient is nervous it is well to tie his hands behind the neck so that a sudden movement may not contaminate the field of operation. The feet also may be tied, in all cases perhaps.

5. The stomach and bowels should be empty, as for chloroform-anesthesia.

6. The Abbott hyoscine-morphine-cactin tablet should always be employed. One may depend on Abbott's preparations.

7. If anesthesia is not complete, a few drops of chloroform by inhalation will cause almost instant snoring. Repeat as needed.

Effects

1. The analgesia appears to be complete for many hours. In two cases where hypodermoclysis was ordered several hours after each patient had been returned to bed, there was no indication of sensation when the large needle was introduced.

2. The first effect is an excitement—in two of my cases delirium developed—with slight dilation of the pupils. Then the patient becomes quiet and the pupils are midway between dilation and contraction. Soon, in favorable cases, deep sleep follows.

3. After the second injection (which may arouse the patient) profound sleep will be noted in most cases; but some subjects insist upon muttering or even talking throughout the operation, though making no complaint about its hurting and knowing nothing of it on awakening.

4. Sleep continues for many hours, in most instances, if three injections are used. Friends must be advised in advance that the sleep may continue twelve hours or more; and that without danger if patient is watched and aroused if respirations sink below six per minute.

5. The patient can be aroused at any time by shaking or a loud command, and may be made to assist in changing position or to sit up for application of bandages, etc. In a fraction of a minute, or at most in two or three minutes, slumber is again deep and other operative work may be done.

6. The secretions are not greatly interfered with.

7. Peristalsis is not arrested, as one would expect from so large a dose of morphine.

Remarks

1. Women seem to require less than men. (Which is true of any anesthetic.)

2. Ether should as a rule not be given with the hyoscine-morphine combination; if anything is needed, chloroform is best. (The few reports on the use of ether following H-M-C are favorable.)

3. A beautiful thing about the method is the absence of vomiting—of great importance in abdominal surgery. Another favorable feature is the absence of postoperative pain; patients usually sleep all night following operation and awake next morning demanding breakfast.

4. It is the ideal method of producing anesthesia for obstetrical work, particularly for delivery with forceps. It does not greatly retard labor.

5. If the patient moves or groans during operation, the temptation to give chloroform should not hastily be yielded to; all that is usually necessary is to say in a positive way: "Lie still! You'll not be hurt," wait until sleep or perfect quietude is resumed, then proceed.

6. While the effects of the compound are decided, suggestion may properly be utilized to aid the action and render smaller doses necessary.

Disadvantages

1. The only serious disadvantage that I have noted is that muscular relaxation is not absolute—so that it is not applicable to very delicate work, like that on the eye. In flap-amputations this is a great help.

2. It cannot always be used with a crowd around, as in a clinic, excitation being likely to result from the noise.

3. After one has become accustomed to it there is a tendency to do one's work too slowly—it induces laziness on the part of the surgeon, who quickly learns that he doesn't have to make haste.

Advantages

1. Economy. About three cents covers the entire cost of several hours' anesthesia.

2. No assistant is necessary in many operations—save as a precaution against lawsuits (abortions, railway injuries and the like).

3. No nausea or vomiting; this is of special advantage in abdominal work.

4. No shock. There is no shock (except from great loss of blood) with this anesthetic. Its use demonstrates that most operative "shock" is the result of too much chloroform or ether.

5. No pain, or but little, after operation; a great inducement to patients reluctant to submit to surgical treatment.

6. Absence of fear of chloroform or ether on the part of either patient or surgeon; the advantage of not having to hurry because the patient does not take the anesthetic well can scarcely be overestimated.

7. Fear of operation disappears, and with it all objections to the surgeon's work and all mentally-induced auto-toxemia is prevented.

8. The danger of hemorrhage is much decreased.

9. Gauss's analysis of his 1000 obstetric cases shows a reduced mortality of mothers and infants, and even greater advantages from preventing the impression on the nervous system made by the agonies of childbirth. Many reports show how the use of the H-M-C (Abbott) anesthesia dissipates the fear of maternity.

Lumbar Anesthesia.—Injection of cocaine solution into the spinal column gives perfect analgesia of some hours' duration, below the neck. So also does an injection of small quantities of sulphate of magnesium. However, these are very dangerous; eight deaths are on record and many others have not been reported. In the light of our present knowledge the method is scarcely justifiable. If used at all, it should be limited to (1) aged patients, (2) those affected with arteriosclerosis, (3) persons who have cardiac lesions, (4) subjects of bronchial and pulmonary disease.

Method of Use.—The method, as described (for tropacocaine) by McCombs (*The American Journal of Clinical Medicine*) is as follows: The syringe employed is a Luer all glass, with graduated barrel, capacity 25 minims. The needles are three inches long, have a pointed tip and dull edge, thus separating the tissues and not cutting out a plug. The needle connects with the syringe by a joint.

The needles with rammers are thoroughly boiled, also the syringe, the piston being removed from barrel. Dip the tube or vial containing the tropacocaine in an antiseptic solution and dry with sterile gauze. Break the tube or remove cork and roll the powdered tropacocaine into the bottom of the barrel. Slowly introduce the piston,

being careful not to blow the powder out of the end of the barrel.

How to Locate the Point of Puncture.—The syringe is laid within easy reach of the right hand. The patient's pulse, being taken, will register from 80 to 100 from mental anxiety and fear of operation. The lumbar region is cleaned and the third or fourth intervertebral space located. This is done by having patient flex and extend the trunk, while the finger locates the dimple or depression below the tip of the spine. In lean patients this is quite easy. In fleshy patients stretch the edge of a towel from the highest points of the crests of the ilia; the fourth interspace is on this line. Now have the patient lie on the side and flex the spine, or better still, have him sit on the edge of the operating table and bend forward until the folded, flexed elbows rest upon his knees, arching his spine. If he does not arch the spine an assistant may press backwards on his abdomen; this procedure widens the interspace between the vertebræ to its greatest extent and serves to secure the success of the operation.

Making the Injection.—Now with the exact spot located, allay the patient's fears by telling him you are not going to stick him with a needle, and not to jump or jerk. The operator kneels on the opposite side of the table, his left index finger on the intervertebral depression, below the spine of the fourth vertebræ in the midline, not to one side, with the needle in the right hand and at right angles to the skin surface. Make slow but firm pressure on the needle to press it through the thick skin. If bone is struck the resistance is decided, and the needle must be slightly withdrawn and direction changed. If the intervertebral space is entered, the needle imparts to the hand a peculiar cartilaginous crepitus, followed by lessened resistance as the needle enters the spinal canal, and clear fluid appears at the needle end. Quickly

place left index finger over needle end, to prevent the escape of any fluid, and attach syringe by means of joint. Gently pull out the piston until spinal fluid fills the barrel to the 8- or 15-minims mark, and by turning the syringe two or three revolutions, the tropacocaine will quickly dissolve in the spinal fluid. Now press the piston clear in, tell the patient to straighten up his back, and as he does so, remove the syringe and needle. The skin puncture is covered by cotton and collodion.

The patient can now be prepared for the operation, and by the time he is washed up anesthesia will be complete; in from two to five minutes for operations below the diaphragm and three to fifteen above, and will continue for one and one-quarter to three hours.

Anesthesia is complete and any operation may be done. Only the sensations of pain and temperature, however, are destroyed, the pressure and muscular sense being unaffected. For example, the patient can feel the pressure of a hand against him or as one seizes a group of muscles but he cannot feel cutting or crushing instruments. He is able to walk (though this is not advisable), can flex or extend his limb at command, and so assist the operator if necessary; he has perfect control of his higher mental faculties, can answer questions intelligently or make statements which might be of value both to patient and physician.

Phenol a Local Anesthetic.—For making small incisions in the skin (like opening an abscess, cutting out the end of a needle, etc.), an anesthesia may be produced by the use of phenol liquefactum—i. e., liquefied 95-percent carbolic acid—when no other agent is at hand. A spot an inch or more may be painted with the pure phenol. For a brief space of time there will be a burning sensation, succeeded almost instantly by a cool feeling as the skin turns white and shrivels. In a few minutes

the skin may be cut without pain, but underlying structures are not insensitive to the knife. It does not seem to interfere with healing under a sterile dressing, and possesses the advantage of thoroughly sterilizing the superficial layers of the skin.

Tropacocaine for Spinal Anesthesia.—Better than cocaine for the production of anesthesia by intraspinal injection is tropacocaine. It is claimed that in many thousands of anesthetics produced by it the headache and nausea were no more marked than after simple spinal puncture, and no dangerous effects were seen. The technic differs from that usually employed, in that the tropacocaine in powder is placed in a sterile glass, and the spinal fluid being drawn into the glass dissolves the substance, no water being added. For operations on the legs and perineum, 3-4 grain suffices, but for the abdomen 1 grain is required. It should not be used in children less than fourteen years old, although old age is not a contraindication. As it lowers blood-pressure it may be dangerous in persons whose blood-pressure is already low. Increased extent of anesthesia must be obtained by raising the pelvis and not by increasing the dose.

Vomiting After Anesthesia.—Vomiting after anesthesia will cease spontaneously in a few hours (twenty-four at the farthest) unless acute sepsis is coming on, provided all water or other fluid is scrupulously avoided. Above all things, ice in the mouth should not be permitted—it tends to prolong nausea indefinitely; but the tongue and lips may be moistened every few minutes with a cloth wrung from ice-water. For wealthy patients a little iced champagne may be ordered after eight hours—a half teaspoonful every half-hour until the end of the first twenty-four hours, when, if vomiting has ceased, water may be given cautiously; if it is thrown up, another twelve hours of abstinence must be enforced. For patients

who cannot afford champagne, one drop of phenol in a teaspoonful of peppermint water may be ordered every hour, if the patient and friends demand something in the way of medication. But the best remedy is perfect quietude and withholding of fluids.

ANEURISM.

Aneurism, whenever possible, should be subjected to operative treatment: excision or at least ligation. Insertion of silver wire into the aneurismal sac has many enthusiastic advocates, notably MacEwan, who has had some splendid results. But when so situated as to be inaccessible (as in the thorax) or inoperable (as of the abdominal aorta), or from size, certain medical and dietetic measures may be instituted.

The subcutaneous injection of gelatin has been highly lauded. It is liquefied and injected into the buttock with a specially constructed syringe. It is presumed to add materially to the coagulability of the blood; but its usefulness is doubtful.

Aneurism of Aorta.—Silver wire may be introduced into the aneurismal sac through a fine canula, insertion being made at the point where pulsation is most prominent. The skin is carefully sterilized, the boiled canula and trocar thrust in, the trocar withdrawn and the opening instantly closed by means of sterile gauze; then from fifteen to thirty feet of No. 28 silver wire may be slowly passed in. When a sufficient quantity has been made to coil up in the sac, the canula is to be withdrawn and the proximal end of the wire fastened to the chest-wall by adhesive plaster. No anesthetic is necessary. At the same time one may inject into the buttock about 300 Cc. of a 2-percent gelatin solution, which is presumed to facilitate coagulation of blood. If the wire causes pain after a time—two or three weeks—a part of it may be very cautiously

withdrawn, though this is dangerous on account of the possibility of loosening some part of the clot. If the open pleura have been punctured in the introduction of the trocar, hemothorax may develop and cause distressing symptoms and sometimes death. So extreme care should be taken not to puncture it. In abdominal aneurism it is best to make an abdominal section at the time of inserting the wire. Some cures have been recorded—and many failures.

Calcium Chloride for Aneurism.—A remedy for inoperable aneurism which has attracted considerable attention of late is calcium chloride. It is well known that the lime salts taken for a long time increase the coagulability of the blood; so, theoretically, when an aneurism is to be treated by the “rest” method or by insertion of wire into the sac, the use of calcium salts ought to be of decided benefit. Practically applied it seems to be of service in non-operative treatment; and it certainly will do no harm to give it for some days before needling or wiring is to be tried. It may be given in quarter-gram to half-gram doses (3 to 8 grains) three times a day. Plenty of water must be given with it.

Iodides for Aneurism.—The pain and throbbing of inoperable aneurisms often may be ameliorated by the internal use of iodide of potassium. Even though there may be no suspicion of syphilis as a cause, the iodide should be tried before resorting to morphine or other opiates. In doses of one to two Grams (15 to 30 grains) three times a day, with enforced quietude and restricted diet, it affords perfect immunity from suffering; but it may have to be continued for many months, the slightest reduction from the dose of tolerance causing immediate return of the pain. It is presumed to act by depressing the heart, though it may have some direct effect upon the diseased vessel-walls (especially in cases due to syphilis). In some cases,

undoubtedly luetic, it is necessary to increase the dose to five or six grams thrice daily. A few cures have been reported.

Threatened Rupture of Aneurism.—When an aneurism threatens to rupture through the skin (as is frequently the case with the femoral, carotids, and even the aorta) the following treatment should be instituted:

The patient must be put in bed and perfect quietude enforced; if one of the extremities be affected it should be immobilized by some kind of splint; if the neck be the site of trouble the head must be fixed between sand-bags, with no pillow. Enough morphine to keep the patient tranquil is advisable. Diet must be restricted to a very little of the most nutritious of foods and the amount of drink limited to the least possible. Veratrine in doses of one milligram (gr. 1-67) is to be taken every half to two hours until the pulse is soft and weak; and then three or four times a day to maintain it so. Iodide of potassium is to be given in doses of a half gram (8 grains) three times a day and rapidly increased until four grams (60 grains) are taken at a dose—and this whether or not the patient has had syphilis; if he has, the increase may be continued to a much greater dosage, a half ounce or more thrice daily often being tolerated by luetics. Locally, the best treatment is to paint with collodion night and morning.

Under this plan many cases have been greatly relieved and some apparently cured.

ANGIOMA

This tumor is one composed entirely, or in great part, of blood-vessels—mostly of new formation. In women they sometimes become distended, or more prominent, at the menstrual period. The majority are congenital; very rarely angiomas develop after puberty. Their

growth is commonly painless, slow and irregular. Sometimes ulceration of the skin occurs—with either alarming hemorrhage or spontaneous cure of the growth. They should be removed by operation when they are conspicuous or when they show a tendency to grow.

ANKLE: DISEASES OF

Drainage of Ankle.—Drainage of the ankle as usually practised is very unsatisfactory, and a panarthrititis usually develops, in many cases necessitating an amputation through the leg. This has led to the devising of a more satisfactory plan of drainage. The ankle joint consists not of a single compartment lined by a synovial membrane but rather of two, one anterior, the other posterior, separated from one another by the astragalus and the two malleoli, and in communication, so far as the flow of synovia or exudate is concerned, only by narrow channels beneath the lateral ligaments. Hence drainage conditions can best be met by removal of the astragalus. The method of the removal of the astragalus depends upon the original injury. It is most accessible through an incision over its head parallel to and to the outer side of the extensor tendons, made with the foot strongly adducted. The resultant stage is as good if not better than where, even if the leg is saved, a stiff and tender ankle is obtained.

Sprained Ankle.—As the x-ray has shown that large numbers of so-called sprains of the ankle are sprains plus fracture, examination with the fluoroscope is advisable whenever possible. If fracture be found, plaster-paris dressing and perfect rest of the joint for three weeks is advisable. If no fracture is present, massage and dressing with strips of surgeon's plaster is perhaps best, with immediate use of the limb. But in case of severe injury total rest is preferable.

ANTHRAX

Three conditions are grouped under the name "anthrax."

1. Benignant anthrax, characterized by a peculiar carbuncle; a painful, dark-colored tumor in the subcutaneous cellular tissue, which becomes much inflamed and then necrotic, discharging a fetid, bloody pus. It is a purely local infection with *bacillus anthracis* (i. e., without any anthracemia) and is not a fatal disease. Early excision and thorough cauterization of the wound by nitric acid or the Paquelin cautery is the proper treatment; the resultant sore being handled just like a simple burn.

2. Malignant anthrax, the "malignant pustule" of older writers, or "wool-sorters' disease": infection from animals suffering with splenic fever. The pustular trouble gradually extends until the whole system is involved, the intestinal tract finally is invaded and gives rise to what is called "the intestinal type" of anthrax. The local lesion is treated in the same manner as in the benignant form; the anthracemia by injection of the Pasteur serum.

3. Symptomatic anthrax, the disease called "black-leg" in sheep (quarter-evil). It is due to the *bacillus Chauvæi*.

ANTISEPTICS

Antiseptic and Germicidal.—It is strange that medical men apparently well educated will use the word "antiseptic" as the equivalent of "germicidal." The word germicide means anything which will kill a germ—a term formerly regarded as meaning "bugs", or microscopic animals of some kind, instead of the minute fungi—invisible plants—which play such an important part in disease; whereas "antiseptic" simply implies some agent which will inhibit the growth of microorganisms, antagonize or destroy their poisonous products or prevent the absorp-

tion of their toxins. We employ antiseptic precautions in preparing for and performing an operation; we wash our hands in germicidal solutions. Asepsis and antiseptics also should never be used interchangeably, as is so often done.

Antiseptic Dusting Powder.—To replace the costly proprietary articles used for dusting on wounds the United States Pharmacopeia recommends “thymolis iodidum”—the iodide of thymol. It is now prepared of standard U. S. P. strength by all leading manufacturing chemists and can be obtained on prescription from all first-class druggists.

Antiseptic Solution: General.—A most useful antiseptic to use for douches, irrigations, etc., is the “liquor cresolis compositus” of the United States Pharmacopeia. It is of the same strength as “lysol” and may be used by those who prefer a non-proprietary preparation. The formula is:

Cresol, pure	500 parts
Linseed oil	350 parts
Potassium hydroxide	80 parts
Water, enough to make	1000 parts
Mix. Mark: “Poison.”	

It is about the same strength as carbolic acid. Solutions, 1 to 40, in water are highly germicidal.

Dobell’s Solution.—This excellent antiseptic solution, of especial use in nasal and laryngological work, now should be of uniform strength wherever prepared, the National Formulary specifying that it shall contain:

Sodium borate	Gm. 15.0 (oz. 1-2)
Sodium bicarbonate	Gm. 15.0 (oz. 1-2)
Phenol	Gm. 3.0 (grs. 45)
Glycerin	Cc. 35.0 (ozs. 1 1-6)
Water, to make	Cc. 1000.0 (ozs. 32)

Harrington's Solution.—One of the best antiseptic agents, if not the best, is Harrington's solution. It has this composition:

Hydrochloric acid	60.0 parts
Alcohol (94 percent)	640.0 parts
Water	300.0 parts
Bichloride of mercury.....	0.1 part

Experiments show that this solution will sterilize carbuncle-pus in less than thirty seconds, while it requires tricresol five and one-half minutes, and carbolic acid four minutes, to produce the same results. It is especially useful for hand disinfection and for use in preparing the skin for incision. On account of the corrosive sublimate it contains it should be preceded by ether and followed by a little plain water.

Sterilization of Knives.—The question is often asked: How may knives be sterilized, as boiling dulls them so? Royster, as the result of experiments and of correspondence with a large number of operators, has reached the following conclusions: "(1) Knives can be safely sterilized by chemical and mechanical means without the use of heat in any form. (2) The majority of American surgeons are using carbolic acid, or alcohol, or both. (3) Immersion in ninety-five-percent alcohol has the least, and boiling the most, effect in dulling the edge of a knife." To all of which I want to offer the most strenuous objection. After a knife has been in a streptococcus abscess *nothing but boiling is safe!* Boiling does *not* seriously dull a knife if it be boiled in a very strong solution of washing soda (sal soda); cooking soda (bicarbonate of soda) will *not* do—it is absolutely useless; but the carbonate (sal soda) can be relied upon invariably. I have a knife which has been boiled 5000 times and it still "works." Of course the knife is sharpened now and then.

Thymol.—This stearoptene derived from thyme and other vegetable oils is a more powerful antiseptic than phenol (carbolic acid). It is usually employed in the form of Volkmann's thymol solution:

Thymol	1.0
Alcohol	20.0
Glycerin	20.0
Mix well and add	
Water	1000.0

This may be used as either a spray or lotion. When phenol or sublimate solutions irritate (especially causing eczema) this may be used instead.

ANURIA: POSTOPERATIVE.

Possibly the best remedy for suppression of urine after operation is sulphate of sparteine, regardless of the cause of anuria. Most of these cases are due to a pre-existing nephritis from sepsis, cholemia, etc., and should then be treated with this remedy before operation as well as after, because the anuria is to be anticipated, regardless of the kind of anesthetic used, chloroform being apparently as dangerous in this condition as ether or the newer hyoscine-morphine-cactin combination.

Every patient affected by sepsis or cholemia should therefore be examined for albuminuria, and if this be found, operation should be postponed a few days, if possible, until the sparteine be given. But, unfortunately, patients suffering from obstruction of the common bile duct, from strangulated hernia, from retention of urine, etc., cannot be held—so here the surgeon must operate and do the best he can to prevent anuria by immediate resort to proper therapeutic measures. For if vigorous treatment is not instituted the patient may do well for a few hours, then become restless, listless and slightly feverish, later developing a stupor which speedily passes into coma, ending

in death from uremia, even though anuria may not be complete; in the more pronounced type total suppression of urine being noted.

The first thing to do is to give plenty of normal salt solution under the skin; one liter (a quart) being injected every eight hours; next, to administer sulphate of sparteine, a drug which increases the blood-pressure and acts as a powerful diuretic. Within thirty minutes its full action will begin, and the slow and full pulse indicates persistence of its effect from four to six hours, at the end of which time the dose is to be repeated. The amount to be given is 30 to 50 milligrams (from one-half to three-fourths of a grain) hypodermically. The patient should be encouraged to drink as much water as possible.

ANUS: DISEASES OF.

It is peculiar that, accessible as is the lower four inches of the rectum, its diseases should be so ignored by the general practitioner. Even the anus, plainly visible to simple inspection, is seldom examined, although complained about. Prescriptions should never be given until ocular evidence of the existing malady has been obtained; an operable cancer might be ignored until too late to save life. The four symptoms: pain, protrusion, hemorrhage and discharge, may be present in so many conditions that to "guess" is almost criminal.

Of the troubles common to the anus the most likely to be found is hemorrhoids (which see).

Abscess of Anus.—A superficial abscess may form in one of the small glands around the anus, as well as from ulceration of a small external hemorrhoid, and rarely from trauma to the cellular tissue surrounding the anus. On account of the tendency of pus to burrow at this particular part incision should be made, under cocaine injected well behind the little abscess, so that as soon as the pus

is expressed search may be made with a probe to ascertain whether the trouble be simply a localized abscess or the lower end of (a) an ischiorectal abscess, or (b) a forming fistula of the rectum.

Artificial Anus.—This must be made whenever the natural outlet is closed by cancer, tumor or inoperable stricture. It is made by opening the abdomen by a two-inch cut over the sigmoid, drawing a loop of gut out, packing gauze into the cut around the bowel and opening the intestine three or four days later, after the peritoneal opening has been closed by adhesions. In some cases a complete colostomy is to be made.

Cancer of the Anus.—Cancer of the anus is not so common as that of the rectum, but is susceptible of complete cure if recognized early. Two methods of removal are subject to choice: (1) excision and suturing, with rectal packing for some days; (2) very deep destruction of infected and adjacent tissue with the Paquelin cautery. The latter is less painful and gives better ultimate results. It should be used with the patient in full surgical narcosis, with the sphincter thoroughly dilated; and the rectum must be packed tightly with iodoform gauze, which is to be removed in forty-eight hours.

Chancre of Anus.—This affection occasionally comes under the observation of the surgeon (in Chinese coolies, for instance). It is to be treated the same as the initial lesion of syphilis elsewhere.

Fissure of Anus.—Obstinate cases of fissure of the anus which resist all other forms of treatment may be permanently relieved by simply cutting through the external sphincter under local anesthesia. The incision must be directly in the line of the fissure. After division of the muscle the rectum should be packed with iodoform gauze for two days; then the wound should be loosely packed once every twenty-four hours for four or five days, after

the bowels have moved and the sigmoid and rectum have been washed out with tepid water.

Before resorting to radical operation, palliative measures should always be tried, first. The most important thing is a laxative diet, and soft bowel-movements must be secured by mild cathartics, if necessary. On retiring each night, there should be an injection of an ounce of olive oil, to be retained until morning, which aside from its local beneficial action will secure a soft movement. Next in importance to the regulation of the bowels, is that strict cleanliness should be maintained, by bathing the anus night and morning, and also after each defecation, with hot water. The parts should afterward be dried with a sterilized piece of gauze, and a pad of the same material placed over the anus and kept in place with a T-bandage. The fissure itself may be burned once a week with stick nitrate of silver. It seems to act like a charm in allaying the painful symptoms, and often a few applications will prove sufficient.

Non-operative treatment means merely to give laxatives and to burn thoroughly the fissure with pure carbolic acid. Next day it is well to begin the use of glycerin suppositories containing 5 percent of iodoform. In a few minutes a free and painless bowel-movement will occur. The suppository may be used every day. An old remedy was a teaspoonful of sulphur at bedtime and by its mild laxative effect it certainly did much good. It may be combined with powdered cinnamon to correct the smell and taste.

This little, painful, irritating crack in the skin and mucous membrane of the anal verge is generally due to the passage of hardened feces. Simple dilation of the sphincter, burning the fissure thoroughly, and maintenance of subsequent laxity of the bowels usually suffice. A soothing ointment may be ordered.

Fistula of Anus.—When fistula of the rectum, commonly called fistula in ano, is found, a probe should be run through it into the gut and, with local anesthesia, the sphincter be divided. The wound must be repacked daily until healed from the bottom. If slow in granulating, balsam of Peru may be used to stimulate rapid healing.

Imperforate Anus.—Babies are sometimes born with no connection between anus and sigmoid; and even the anus is missing in the worst cases. If the obstruction be a mere membranous septum it may be divided by the knife, cutting toward the coccyx. If there be a long distance between anus and sigmoid the child must be chloroformed and careful dissection made, upward and slightly to the left, in the hope of opening into the rectum or sigmoid; if found the wound is to be tamponed with gauze for three days; if not found, the peritoneum may be opened and the sigmoid brought down to the anus and sutured there if possible. When this cannot be done the wound must be tamponed and an artificial anus made. In cases where no anus is present, inguinal colostomy is the only treatment. It is not a serious operation.

All operators now agree with Hunter on the following propositions: (1) An operation should always be performed, and performed without delay. (2) If there be any chance of establishing an opening at the normal site of the anus, the surgeon should at first direct his attention to this procedure. (3) The use of a trocar as an aid in finding the rectal pouch before or after incision through the perineum is not sanctioned by modern surgical authority. (4) The results of attempts to establish an outlet for an imperforate rectum through the perineum are not favorable as regards the production of a useful anus. (5) In case of failure to establish a new

anus in the anal region, colostomy should at once be performed. (6) In the formation of an artificial anus the left groin is the best site for the operation. (7) Attempts at establishing an anus in the anal region after a colostomy are attended with great danger, and are generally unsuccessful.

Prolapse of Anus.—Protrusion of the rectum (or of its mucous membrane) must be treated by returning it again and again within the sphincter, following each time with an astringent injection. If this does not cure, the sphincter may be dilated and several lines burned into (but not through) the mucous membrane parallel with the long axis of the gut; a Paquelin cautery being used, with complete chloroform or hyoscine-morphine narcosis. In the worst cases resection is necessary, but it is a very serious operation, since the peritoneum is to be opened. Ventral fixation of the sigmoid (colopexy) is preferred by some proctologists.

Pruritus Ani.—Nearly all cases of persistent itching of the anus may be traced to one of these causes: (1) The most common is superficial ulceration or abrasion of the anal canal. (2) Next, catarrhal diseases of the rectal mucosa which cause discharge from the anus. (3) External hemorrhoids or skin-tags which prevent proper cleansing of the parts. (4) Small polyps of the anal canal, protruding internal hemorrhoids, prolapse, fissures, etc. The treatment consists (in addition to removing the cause) in restoring the altered perianal skin to the normal. For this purpose nitrate of silver followed by citrine ointment are the best applications. Pruritus is also caused by the irritating discharges from long-retained fecal accumulations in the cecum or colon. In children the trouble often arises from the presence of seat-worms, which may be remedied by the injection, three times a week, of infusion of quassia.

AORTITIS, ACUTE

Inflammation of the arteries is not perhaps of so much interest to surgeons as is phlebitis, yet it is occasionally encountered. Of all arteries the aorta, particularly its arch, is the most subject to pathologic changes. This is due to the fact that the first part of the aorta has no sheath, and the blood forced against the walls at each systole acts as a constant irritant to the coats at that point. There are also such predisposing diseases as rheumatism, typhoid fever, scarlet-fever, smallpox, puerperal diseases, the grippe, tuberculosis and syphilis, which produce an alteration in the walls of the aorta. The symptoms are pain in the aortic arch, or a substernal soreness or tenderness. Dyspnea is marked, and peculiar in that it continues both with inspiration and expiration. A diagnosis is seldom made, and according to Anders cannot be established with any absolute certainty. The treatment indicated is absolute rest, cold to the chest, sedatives to quiet the heart, and restriction of diet. As a rule diagnosis is made after death.

APPENDICITIS

Inflammation of the vermiform appendix has been variously called "echyaditis," "epityphlitis" and "appendicitis." By common usage the last name has become standard, though not constructed to suit philologists. The appendix itself is named, in full, appendix cæci vermiformis.

Strictly speaking, perhaps, appendicitis is always a surgical disease, and the infected part should be removed within the first few hours after active inflammatory changes begin. But, there are some people who will not consent to operative treatment "as soon as the diagnosis is made;" there are some doctors who will not operate themselves, yet who are so situated that a competent sur-

geon cannot be gotten to the charity patient far away from city or town. What is to be done in such cases?

First, Bowel-Evacuation.—Long experience has convinced me that thorough purgation does no harm, Ochsner and others to the contrary notwithstanding; indeed it does much good if purgation can be secured by some agent which will not produce vomiting. Therefore, to patients who are not to be subjected to immediate operation I give a good dose of Abbott's saline laxative, repeated in four hours, if the results are not satisfactory. A small enema sometimes is useful; but care must be taken not to distend the colon. Late in the disease olive oil is useful.

Second, Pain.—For the control of pain sulphate of codeine may be used, guardedly; any opiate produces a tendency to nausea—and vomiting is one of the most distressing (and sometimes dangerous) symptoms of the disease. Three centigrams (one-half grain) of phosphate of codeine may be given hypodermically at any time when the pain is intense; or the same quantity of the sulphate may be left in pill-form to be given every three or six hours, by mouth, as needed; as little as possible being given. Morphine costs less, but may kill the patient; codeine is cheaper than a coffin. Hyoscyamine is especially effective when the pain is due to muscular spasm; given to full effect.

Third, Fever.—In uncomplicated appendicitis the temperature seldom runs above 100° or 101°F.; hence "fever medicine" is not often required. When the temperature goes above 102°F. a small dose of acetanilid will cause it to drop to about normal for some hours while it relieves the pain and nervousness; one-half gram (8 grains) may be given in one dose, if there is no decided weakness of the heart. Aconitine may be given, if preferred, until the temperature and pulse drop to the required degree.

Fourth, Vomiting.—This frequently is an early, persistent and aggravating feature of appendicitis of severe type, and is indicative of oncoming sepsis; when black-vomit appears the patient generally dies of acute sepsis (commonly called “diffuse peritonitis”). For its prevention three things are necessary: (a) cleaning out the intestinal canal; (b) perfect quietude; (c) abstinence from food and drink. For the first forty-eight hours it is best to withhold all food by the stomach (rectal feeding may be instituted every six hours with patients extremely weak), and give as little water as possible. The pleading for “a little ice in the mouth” must not be heeded—if permitted it surely will lead to vomiting. After the first two days, if vomiting does not occur, the amount of water by stomach may be increased and liquid diet carefully begun. When vomiting persists food must be abandoned and water by mouth refused—thirst being overcome by enemas of not more than six ounces; if it becomes alarming one milligram (gr. 1-60) of salicylate of eserine may be given hypodermically every two hours, four times. An oxgall enema will help to turn the peristaltic wave downward.

Fifth, Distension.—To prevent this the saline laxative may be given every morning, guardedly; there need be no hesitancy on account of possible leakage through a perforation, as peristalsis alone will never force feces through a hole in the appendix; and it does not to any serious degree prevent the formation of adhesions, the protective barrier against general infection. But when distention is great the ice-bag may be used—or hot fomentations, if they give more comfort to the patient, as is frequently the case. Local use of Credé’s ointment, mud-glycerin poultices, etc., does no good except to make the people think “there’s somethin’ doin’ ”; but a few drops of oil of turpentine dissolved in olive oil and thrown

up in the colon sometimes does good; and if the distension be due to gas in the colon an alum enema is of great service.

Sixth, Tumor.—In a large proportion of cases a mass can be felt in the region of the appendix. It means perforation of the wall of the appendix—the presence of pus—and is a positive indication for abdominal section. If radical operation is refused and the abscess is inclined to open externally, poultices may be applied to assist, and simple incision made as soon as possible.

A large proportion of cases which ought to be subjected to operative treatment must be taken through the attack safely without it; but it is the duty of every doctor to explain the dangers to patient and friends, and to insist upon operative treatment whenever especially indicated (as the formation of a mass in the cecal region) if the services of a fairly competent operator can be secured.

Appendix in a Hernial Sac.—Not at all infrequently an appendix may be found in a hernial sac; and like the gut it may become strangulated and gangrenous. It should always be removed when in an incarcerated hernia, as the macroscopic examination might not reveal the existence of changes so serious as to cause perforation if it were returned to the belly. It may even be found in the scrotum. In one of my operations for scrotal hernia an appendix seven inches long, adherent to the testicle, was removed from the scrotum of a boy only five years of age.

Appendicitis in Pregnancy.—What shall be done in a case of appendicitis occurring in a woman well advanced in pregnancy? If the case be mild it may be treated by medicines alone; if severe, there need be no hesitancy about operation, and the operation should be the same as in any other patient. If the work be done under hyoscine-morphine-cactin anesthesia (plus a little

cocaine for the skin or chloroform, if needed) there need be little fear of premature labor. The uterus is simply held to the left side of the belly by an assistant while the appendix is removed or the abscess opened and packed. If labor does appear the wound should be well protected and supported by two or three strips of adhesive plaster and a wide binder firmly applied.

Colitis after Appendectomy.—When discharging a patient operated upon for appendicitis the surgeon should invariably explain the very important point that after removal of the appendix, symptoms of appendicitis sometimes persist, leading the patient to believe that the organ has not been extirpated. These are generally due to a colitis, which must be treated by high irrigations, diet, etc.

Diffuse Suppurative Peritonitis from Appendicitis.—When the abscess adjacent to the gangrenous or perforated appendix has ruptured and the pus has become disseminated throughout the lower part of the abdomen and pelvis, the incision should not be made over the site of the original abscess (appendical region) but in the midline; and it should be very free: three to six inches in length—indeed, sometimes from the pubes to two or three inches above the umbilicus. But the peritoneum must be subjected to as little handling as possible, rubbing with gauze being especially injurious. The best management seems to be (a) to wash out the abdomen and pelvis with gallons of hot saline solution; (b) remove the appendix and such part of the omentum as seems too badly infected to live; (c) again wash out the belly and sponge out the surplus fluid; (d) close the abdomen without drainage. (Drained patients almost always die.) If this method of treatment be adopted within seventy-two hours after the rupture occurs, a large percent of cases may be saved; later than that time the

prognosis invariably is bad. Operation in these cases should therefore be performed as soon as the diagnosis is made.

Treatment after Appendectomy.—Treatment after appendectomy does not differ from that after any other abdominal section if the belly is closed save in that a cathartic should not be given until seventy-two hours or more, in order that firm adhesion of serosa to serosa over the site of removal of appendix may have time to form; and even then an occasional leakage occurs. But when drainage is instituted the management is quite different, locally. In applying the binder after the operation, and at all subsequent dressings, great care must be taken that there is no pressure directly over the site of drainage.

Most of the periappendiceal abscesses are now drained by gauze, so the only thing to be done for the first two days is to change the cotton and outside layers of gauze as often as they become soiled. When fecal fistula is present, this may be rather often, as the smell is quite offensive, particularly in hot weather. The gauze next to the wound may be changed as early as the fourth day and it is safe to remove all of the packing on the fifth day (though a week is better). In removing the packing the last piece put in should, if possible, be the first removed, but often it is impossible to tell which is last, and frequently the whole mass comes away together when the opening is large. Through an inch incision it is best to draw each strand separately and slowly, particularly those portions lying next to the intestines and omentum—i. e., nearest the midline. In rare cases as late as the sixth day the adhesions will be so weak that omentum, and still more rarely intestine, will follow the last strip of gauze; in which case the protruding mass must be quickly pushed back into the belly and fresh sterile gauze crowded down upon it, and this should then not be disturbed for three or four days.

Under no circumstances should the cavity left on removal of the gauze be washed out with peroxide or other solution, for some small opening into the general peritoneal space may be present through which fatal infection might occur if fluid were poured in. All that is needful is to clean out the pus, feces, etc., by means of pledgets of absorbent cotton on forceps or wooden toothpicks. When satisfactorily cleaned, without any rubbing or pushing, the cavity is to be lightly packed with gauze and the superficial antiseptic pad applied.

ARTERIAL DISEASE

Arteritis.—Acute inflammation of an artery is always a local trouble, usually dependent upon trauma and always upon infection; it may originate from a septic embolus, and a thrombus may lead to ulceration, each with formation of pus.

Socalled chronic arteritis (or endarteritis) is probably not an inflammation at all—an arterial sclerosis, resulting in a peculiar condition known as atheroma, or to atheromatous changes in the vessels, particularly of the aged. (See “Atheroma.”)

Occasionally following thrombosis there is great inflammatory thickening of the endothelium, leading to permanent obliteration of the artery: arteritis obliterans.

There is no treatment.

Wounds of Arteries.—When one of the smaller arteries is cut or torn it must either be ligated, twisted or obliterated by pressure. But if in the course of an operation a very important vessel like the femoral, axillary or internal carotid be cut into, unless completely severed, it should be repaired by fine catgut stitches through adventitia, musculosa and intima, all knots being upon the outside. Then when it is seen there is no leakage, the sheath of the vessel must be sutured carefully

over the point of junction and the wound closed with a firm bandage. If asepsis has been perfect, healing may be obtained; if not, secondary hemorrhage is likely to occur and must be met by temporary firm pressure by the nurse and prompt ligation by the surgeon.

ARTHRITIS

Arthralgia.—Pain in a joint may be due to (1) gout, (2) rheumatism, (3) syphilis, (4) synovitis, or (5) arthritis. The last three belong to surgery. (See "Syphilis," "Synovitis" and "Joints.")

Arthritis Deformans Improved by X-Ray.—Cases of arthritis deformans may sometimes be successfully treated with the x-ray. The exposures are made three times a week, with about one milliamperere of primary current for fifteen minutes. Internal treatment and massage are also to be employed. The method seems to be a valuable one, the rays stimulating the metabolism of the affected joints. This should be taken advantage of and massage and passive movement added to assist in the removal of the exudate.

Arthropathy.—This is a peculiar disease of the joints ("Charcot's joint"), which occurs in the early stages of locomotor ataxia. It speedily destroys the joint, although it is painless and progresses without inflammation. Hydrarthrosis and swelling are the two prominent symptoms. It is rare and affects only large articulations. It must be differentiated from tuberculosis, which can be cured; this affection can not. In spite of all treatment the joint becomes lax, this condition being followed by much distortion; eventually some patients have diminished range of motion, while others have excessive motion.

ARTIFICIAL RESPIRATION

Artificial Respiration of the Newly Born.—Seize the buttocks in the left hand, shoulders and neck

in the right, with face up; bring head and feet together, compressing the thorax, then bend the child backward to form an arch, thus expanding the thorax; after five or six such movements turn the baby over and spank it sharply, which generally is followed by a gasp; if not, turn into first position and repeat the bending forward and backward. Next, if unsuccessful, the child may be allowed to hang with its head directly downward and given two or three vigorous shakes to dislodge mucus from its throat, then brought up into first position, dashed with a little cold water, and respiratory movements be again instituted. Attempts to cause voluntary respiration should not be abandoned for not less than fifteen minutes. As a last resort the lungs may be inflated by blowing forcibly into the babe's mouth.

Artificial Respiration of Adults.—In drowning, the water should first be removed by inverting or shaking or rolling the victim on a barrel; then proceeding as in chloroform narcosis. With the patient upon his back, and head lowered to 45 degrees, if possible, the bare chest is seized in the two hands at the lower ribs, with thumbs meeting below the ensiform. Then firm pressure is made inward and upward to compress the lower part of the thorax to the utmost possible extent; then pressure is gradually relaxed, allowing the chest to expand. After two or three seconds this is repeated. Again and again this movement is carried on, with clock-work regularity—not hurriedly and excitedly, but coolly, deliberately—about twenty times to the minute. Slapping the chest is not to be permitted, as it may paralyze a weak heart just beginning to throb.

This artificial respiration usually will resuscitate the patient in five to fifteen minutes, but must never be abandoned until at least an hour of hard work has elapsed. One case is on record in which life was saved by four hours' efforts.

After the patient has begun to breathe he must be watched for some time, and an occasional artificial expiration be induced if respirations are shallow or inclined to stop altogether. Generally, as soon as redness returns to the face, it is safe to relax vigilance. But some individuals (notably hysterical women) exhibit an aggravating tendency to "hold the breath", particularly in asphyxia, in morphine narcosis and in excess of chloroform, watching for many hours being required.

ASCITES

Abdominal dropsy is most conspicuous in cirrhosis of the liver, in which case it is a clear, yellow, thickish fluid which coagulates on standing. When accompanying kidney-lesions it contains urea. If due to carcinoma it is bloody or turbid and contains shreds. In peritoneal tuberculosis it is like water. When there has been rupture of the chyle-duct it is whitish and contains chyle. From papilloma of the ovary it is like that of cancer. In heart-lesions it is associated with general anasarca or at least swelling of the legs.

Therapeutic measures directed to the hydrops alone seldom are indicated. The proper treatment invariably is to discover the cause and apply appropriate remedies or institute proper operative measures, such as the Talma-Morrison operation for cirrhosis of the liver, simple abdominal section for tuberculous peritonitis, excision of papilloma, and so forth.

When the accumulation is so great as to interfere with respiration the fluid may be let out through a sterilized trocar and canula (taken right out of the boiler and not permitted to touch anything on its way to the already cleaned belly-wall). It should be done under cocaine anesthesia. There is, generally, entirely too little pains taken to secure ideal asepsis in "tapping."

ASPIRATOR: USE OF

At one time aspiration was greatly employed, it being thought proper to withdraw pus (from the chest, for example) and especially serum from cavities without the introduction of air. Since it has been learned that it is not air but dirt which changes serous contents to pus, and that free drainage is better than closed, the method has fallen into disuse. A small aspirator (or large hypodermic syringe) still is used to withdraw small quantities of fluid for diagnostic purposes, but the aspirator as a means of withdrawing pathologic accumulations and injecting antiseptic substitutes has fallen into merited disuse.

ATHEROMA

This is a fatty degeneration of the walls of the arteries, generally termed "atheromatous degeneration." It is of great importance in surgery, because when present in the aged it is a contraindication to severe operative work.

Sometimes there is a collection of soft matter external to the intima—said to be the result of a localized chronic arteritis, but it is doubtful whether it has any relation to pus; yet it is called "atheromatous abscess."

When this "abscess" breaks through the intima it constitutes an "atheromatous ulcer."

When atheromatous changes have occurred the most conspicuous symptom is arcus senilis: a whitening of the outer rim of the iris (but this may be present sometimes without atheroma) but the radial artery, as well as others, may be felt like a whip-cord: hard and distinct instead of soft and compressible.

In very old patients the arteries may be found crumpled; irregular and hard; the "arteritis deformans" of the older pathologists—and indeed its exact pathological character is not yet clearly known. But its surgical significance is

unmistakable: when persistent it is a sign-board to the surgeon—"Keep Out!"

AUTOSUGGESTION AFTER INJURY

This is a peculiar mental condition, intimately related to self-hypnosis, which adds much to the suffering of the patient, particularly after railway accidents. "The mental spontaneity, the will or the judgment, is more or less obscured and suggestions become easily accepted. Thus the slightest trauma directed to any member may become the occasion of a paralysis, of a contracture or of an arthralgia." (Gould.) It has also been called "traumatic suggestion," but the term "autosuggestion" is much better, since the deformity, pain, etc., may appear without any trauma, merely as the result of too intense introspection and a morbid desire for sympathy. Tonic treatment, out-of-door life, change of scene, severe work will do much to correct the evil; rarely the application of some orthopedic apparatus is advisable, but as a rule this does more harm than good by concentrating attention upon the presumably diseased member.

BACK: SPRAINS OF

On account of the number of its articulations and the strain so often thrown upon it, the back is subject to many sprains. These may vary from a slight twisting to an almost complete dislocation. As it is impossible to tell by examination the extent of injury to the deep-lying joint-structures every severe injury should be treated as if it were known to be very serious—until time demonstrates that it is not. An injury which at first seems to be trivial may prove to be extensive laceration of the spinal ligaments; or even a subluxation of the vertebræ. Sometimes even in dangerous conditions there is no swelling of the external parts. Sprains of the lumbar region may be accompanied

by hematuria; but this is but transitory and need not occasion alarm. The treatment should consist of simple rest in bed until the soreness begins to disappear; then application of a stimulating lotion, like the chloroform liniment of the U. S. Pharmacopeia. In case of possible luxation a radiograph may be secured as soon as the patient is able to leave his bed.

BACTERIA OF SURGERY

The word bacteria is used here in its comprehensive sense, that is, to include all of the microscopic plants which are disease-producing. Many of these microbes are bacilli. (The bacillus is a fungus—not animal or “bug,” although possessed of motion—belonging to the schizomycetes.) Others are cocci: coccus, or micrococcus—a spherical bacterium, which may appear isolated, united in twos (called diplococcus then), or in large numbers; when in groups, like a bunch of grapes, they are designated staphylococci, when in chains or chaplets, they are termed streptococci. A few belong to the spirilli (spirillum, twisted-rod).

Those which are of greatest import in surgery are the following:

Actinomyces bovis.—Found in actinomycosis and sometimes in tuberculous sputum—probably a pleomorphic schizophyte.

Anthrax bacillus.—Occurs in the blood of animals and persons infected with anthrax.

Bacillus aerogenes.—A bacterium found in the intestine of healthy persons which may, under peculiar circumstances, get into the cellular tissues and cause great swelling.

Bacillus coli communis.—Occurs in the air, in putrefying infusions, and constantly in the feces of healthy human beings. An active agent in the production of appendicitis and cholecystitis. Is also called bacillus neapolitanus.

Bacillus diphtheriæ.—Known also as the “Klebs-Löffler bacillus.” Distinctive of diphtheritic false membranes.

Bacillus œdematis maligni.—So called by Koch; the *vibrio septique* of Pasteur. The peculiar microorganism of gangrenous septicemia.

Bacillus of Lustgarten.—A supposititious microorganism of syphilis.

Bacillus of Pfeiffer.—The specific microorganism of epidemic influenza (“the grippe”), now known to be a pus-producing germ.

Bacillus pneumoniae.—The presumed causative microorganism of croupous pneumonia; is often called Friedländer’s bacillus. The bacillus is now known to be pus-producing.

Bacillus prodigiosus.—Of interest on account of its use in connection with the streptococcus erysipclatis of Fehleisen in the Coley treatment of cancer.

Bacillus (or leptothrix) puerperale.—A microbe sometimes found in puerperal septicemia—claimed by Pasteur to be *bacillus anthracis*.

Bacillus pyocyaneus.—The distinctive microorganism of blue (or green) pus; is found in normal sweat sometimes.

Bacillus pyogenes fatidus.—A bacillus obtained from ischiorectal abscess. Of little pathogenic significance.

Bacillus of Schimmelbusch.—Found in the necrotic tissue of noma, cancrum oris.

Bacillus septicus sputigenus.—Now generally regarded as the cause of pneumonia; found constantly in the healthy mouth; also in the pus of meningitis.

Bacillus of senile gangrene.—The bacillus of Tricomi has not been demonstrated to be the cause of senile gangrene, but is found in the blood, in the tissues near the line of demarcation, in the subcutaneous tissue and lymph-

spaces of the skin and in the discharge from gangrenous ulcers.

Bacillus of smegma.—Always present in the smegma of both male and female.

Bacillus of tetanus.—Is also called bacillus of Nicolaier; it is derived from earth and horse-manure.

Bacillus tuberculosis.—The well-proven cause of pulmonary and other forms of tuberculosis; Koch's bacillus.

Bacillus typhi abdominalis.—Is also called bacillus typhosus and Eberth's bacillus; the microorganism of typhoid fever.

Bacillus vulgaris.—Not distinctly proven to be of import in surgery, but is constantly associated with putrefaction.

Diplococcus albicans tardissimus.—A microbe identical morphologically with the gonococcus, but more adherent, forming small masses.

Diplococcus intercellularis meningitidis.—The coccus found in the exudates of cerebrospinal meningitis; also pus-producing.

Diplococcus pyogenes ureæ.—Found in purulent urine; as is also *diplococcus ureæ trifolius*.

Gonococcus.—The cause of "clap;" also called Neisser's micrococcus, or *micrococcus gonorrhææ*.

Micrococcus cereus albus.—Sometimes present in acute abscesses.

Micrococcus cereus flavus.—Found in the lemon-yellow pus of certain abscesses; also termed *staphylococcus cereus flavus*.

Micrococcus osteomyelitis.—The germ found in pus of acute osteomyelitis—without doubt *staphylococcus pyogenes aureus* working under peculiar environment.

Saccharomyces albicans.—The microorganism of thrush and rarely of vaginitis; a synonym is *oidium albicans*.

Saprogenic bacteria.—Those which produce putrefaction; cause of sapremia.

Saprophytic bacteria.—Saprophytes: in biology, chlorophyllless plants which derive their sustenance from decaying organic matter; high fever due to the action of the bacteria of putrefaction (as in blood retained *in utero*) is now said to be of saprophytic origin—or sapremia. Saprogenic is perhaps the better term to describe these germs. Treatment will be discussed elsewhere.

Staphylococcus epidermidis albus.—The microorganism of the white pus of stitch-abscesses; a skin coccus, known also as *micrococcus pyogenes albus* and *staphylococcus pyogenes albus*.

Staphylococcus pyogenes albus.—The peculiar microbe of white pus.

Staphylococcus pyogenes aureus.—Found in yellow “laudable” pus; occurs in boils, wound infections, osteomyelitis, ulcerative endocarditis, etc.

Staphylococcus pyogenes citreus.—The microbe of lemon-yellow pus; perhaps but a variation of aureus.

Streptococcus pyogenes.—The virulent germ-poison of erysipelas, puerperal sepsis of the worst form, certain types of carbuncle and deep cellular inflammations; also known as *micrococcus pyogenes*.

BALANITIS

Inflammation of the glans penis. It is also sometimes named balanoposthitis because the prepuce is usually inflamed (posthitis) at the same time. The best treatment is to bathe the part two or three times a day with liquor antisepticus. The menthol compound tablet (A. A. Co.), dissolved in water, makes a good and cheap antiseptic lotion. If there be much secretion, borated talcum may be used, or pure boric acid. If decomposition of smegma be the source of irritation and phimosis prevents the needed oft-cleaning, circumcision must be done and antiseptics

used until healing is perfect. To harden the glans dilute bay rum or other alcoholic application may be used.

BEDSORES

A bed sore is a localized necrosis of skin and subcutaneous cellular tissue, due to an anemia, dependent upon long-continued pressure and low vitality. The three chief preventive measures are (1) cleanliness, (2) frequent change of position, even though slight, and (3) keeping the draw-sheet free from wrinkles. Two teaspoonfuls of salt to a pint of whisky makes an excellent wash to use at places already reddening. A very good combination, used in many hospitals, consists of one ounce of powdered alum, the whites of four eggs and two ounces of spirit of camphor. This is to be used only for prevention of the sores. After the skin is broken and stinking begins, most careful attention is necessary to prevent extensive sloughing. The sore must, first of all, be protected. A rubber ring, air-inflated, may be so placed that no weight comes upon the tissues near the sore; or pillows must be placed above and below to completely remove pressure. The sore must be covered by antiseptic gauze; best dipped in a solution made by triturating equal parts of camphor and phenol, with oiled silk and bandage over it, if it can be applied. When sinuses form they must be widely opened and treated with the camphophenolized gauze. As the patient convalesces the surface of the ulcers may be cauterized with nitrate of silver if they are sluggish in healing. Probably iodoform is the best thing to promote granulation in such cases.

Prevention.—When a patient is to be in bed for a long time, as in fracture of the thigh, great care must be exercised that bedsores do not form. In the first place, linen draw-sheets must be made, sufficiently large that they may be firmly fastened to the sides of the bed so as to pre-

vent creases or wrinkles forming under the body—these and dribbling urine being the most frequent causes. Whenever the sheets become soiled by urine, feces or discharge from a wound, they must be changed. As soon as the slightest redness of skin is observed the affected surface must be rubbed with alcohol (65-percent) and dried and then carefully anointed with glycerin; twice daily at least. Or equal parts of tincture of catechu and liquor plumbi may be substituted for the glycerin if that causes much smarting, as it sometimes does.

BEE-STINGS

For the poisoning from bee-stings, bites of insects, etc., aqua ammonia may be employed, applying it on a little absorbent cotton over the congested area. It may be renewed in a few moments when evaporation of the first application has occurred.

BICHLORIDE SOLUTIONS: STRENGTH OF

Many doctors, and most hospitals, make solutions of bichloride of mercury entirely too strong to be of great value. For purposes of assisting in sterilization of hands and field of operation 1 in 2000 is decidedly to be preferred. It is sufficiently germicidal for all practical purposes; anything stronger—like the commonly used 1 in 1000 strength—so affects the skin that the deeper micro-organisms escape; and after a few minutes' hard work they are brought to the surface by imperceptible sweating. Most surgeons, too, merely wash the hands in the sublimate solution instead of permitting them to soak for two minutes, by the clock. During severe operations the hands should be often immersed in the sublimate solution, and rinsed in salt solution before returning to the wound, particularly in abdominal work. For practical purposes the solution should be prepared at time of operation.

BLACK EYE

Ecchymosis, following a blow about the eye or temple, is sometimes very annoying. Circumstances are often such that it is necessary to absorb the blood quickly and to disguise the extravasation while undergoing the healing process. Temporary discolorations of the skin may be disguised by the application of grease, paint, or collodion colored by means of a little carmine. As a lotion the following is recommended: Ammonium chloride, 10; alcohol, 10; water, 100. Dilute acetic acid may be substituted for half the water and the alcohol may be replaced with advantage by tincture of arnica in some cases. Another good lotion is: Potassium nitrate, 2; ammonium chloride, 4; aromatic vinegar, 32; water, 480.

BLACK-VOMIT

This occurs in any acute sepsis, like that following serious infection of the peritoneum, that which is such an alarming feature of yellow-fever, etc. Very rarely it may be arrested (if the bowels can be started moving) by the exhibition of from 20 to 30 drops of the fluid extract of adruë (the root of *Cyperus articulatus*: antiemetic root; not official).

BLADDER

Atony.—In this trouble there is inability to expel the urine, from deficient muscular power. Small doses of cantharidin and strychnine may be given in the hope of increasing tone, but in many cases a “catheter life” is inevitable. Some cases have been greatly benefited by suprapubic cystostomy made with the sole object of allowing the bladder-walls to contract and have perfect rest for a period of from four to six weeks, when the opening is allowed to close by granulation.

Catarrh of the Bladder.—Following an acute inflammation of the bladder there may be left a catarrhal condition of the mucosa, formerly called “chronic inflammation.” (See “Cystitis.”)

Exstrophy.—Rarely there is met a congenital absence of the anterior wall of the bladder with more or less deficiency in the corresponding part of the abdomen. Repeated plastic operations constitute the only treatment.

Hernia of Bladder.—In operating for hernia, and especially the direct form, the surgeon must be sure to remember that the bladder may be in the sac; and if adherent (as is often the case) may be opened instead of the peritoneum. If the amount of bladder implicated is small, or if it is a postoperative cystocele, it will be found growing thicker upward, enveloped in fat, and this thicker extension will be discovered to be the bladder, if the operator is fortunate. When the prevesical fat is detached the bladder appears. In case of doubt the bladder can be filled with fluid and the effect watched on the suspected cystocele. In presence of a diverticulum or a stone in the hernia, the bladder must be opened and resected; otherwise the bladder is to be reduced unopened. Unfortunately, however, it is discovered most often only after it has been opened—in which event the bladder-wall must be sutured, a permanent catheter inserted and the herniotomy wound drained.

Inflammation of the Bladder.—An irritable deep urethra or ulcer at the neck of the bladder closely simulates inflammation of the bladder; comparatively rare is a true cystitis (which see).

Inversion.—Cases of prolapse of the bladder through the urethra have been reported. The rational treatment is cystopexy.

Irritable Bladder.—A constant desire to urinate is quite frequently met with, especially in women well

advanced in years. It is often very hard to relieve. The use of arbutin, long-continued, is generally effective.

Nervous Bladder.—Closely allied to “irritable bladder” is “nervous bladder,” a condition found in nervous persons who have a desire to pass urine at brief intervals, sometimes almost constantly; yet on attempting to do so they are unable to perform the act perfectly, so there is dribbling at the close and a burning sensation which might lead the uninitiated doctor to suspect the presence of stone. In women a prolapse of the bladder is often the cause of this suffering. (See “Cystocele.”) In most cases the administration of elixir of the bromide of potassium (a teaspoonful two or three times a day) or of eight centigrams (one grain) of arbutin every three or four hours will afford temporary relief. The persistent use of lithium benzoate in doses of one decigram (1 1-2 grains) four times a day will sometimes lead to very gratifying results. Hyoscyamine is quickly effective.

Paralysis.—The symptoms are much like atony—only worse; if the paralysis is limited to the neck of the bladder alone there is incontinence of urine, for which practically nothing can be done; if it involve the bladder-wall there will be retention and the catheter must be used every six hours. In some cases cystostomy is advisable to secure perfect relief from retention with its constant danger of cystitis and pyelitis.

Prolapse of Bladder.—Among women a frequent source of complaint is “irritation of the bladder”—cystitis, they are told by their doctors who proceed to dope them with triticum, hyoscyamus, salol, or various “proprietary remedies.” What is needed in many cases is simply removal of urethral caruncle, prolapse of urethra, or, generally, cystocele. It is so easy and so sure to make anterior colporrhaphy and then a close perineorrhaphy that it is astonishing why doctors do not more frequently

try it. The relief afforded, even if there is no financial benefit, is sufficient reward for the extra trouble.

Sacculated Bladder.—Very rarely pouches form between hypertrophied muscular fibers. Cystostomy is sometimes warranted.

Stone in the Bladder.—Small stones may be cured by lithotripsy (crushing) and irrigation. Large stones must be removed by operation. Suprapubic cystotomy is preferable.

Treatment after Bladder Operations.—Since post-operative anuria is the most frequent complication it is well to give a liter (one quart) of normal salt solution by hypodermoclysis immediately after the patient is returned to bed; and especially so if there be much shock.

As soon as possible, too, as much water as the patient can drink should be given.

When suprapubic cystotomy has been done the urine is usually carried away by a long rubber tube, but there is much leakage around the opening, so it is necessary to change the gauze two or three times a day; and if there be much irritation of the bladder (or cystitis) it is best to also wash out the bladder at the same time, using a saturated solution of boric acid.

The irritation of skin is not as serious as in perineal cystotomy but sometimes requires careful attention.

When the bladder has been sutured and the abdominal incision closed the wound requires no attention until the time to remove the sutures (ninth or tenth day) provided the gauze does not become soiled with urine. But as it is necessary to use the catheter every four hours for a week, in such cases, the dressings usually become sufficiently infected to demand several changes; the layers next to the incision being untouched whenever possible.

With all the drainage-cases a rubber-sheet must be spread upon the bed and soft pads laid over it to catch the

urine, these being changed as often as possible. For if the patient's skin is not protected from the irritating effect of constant immersion in urine, bed-sores of the most aggravated type may form. To assist in preventing this calamity the back, hips and thighs ought to be bathed in dilute alcohol once every day; and may be smeared with vaseline after each alcohol bath. As soon as the strength will permit, the patient must be compelled to sit up in a chair daily, upon a rubber ring, for as many hours as possible.

In perineal drainage there is likely to be a considerable destruction of tissue by necrosis—the urine getting into the muscular and fascial layers in spite of anything that can be done. These sloughs must be cut away from time to time, but not too soon; often it is best to wait several days before pulling them out. After granulation is well established there will be no further trouble, but with old people the process of granulation is not progressing satisfactorily even after two or three weeks, sometimes, and the continuation of necrosis becomes a serious menace. Here the free application of iodoform may be tried, or balsam of Peru smeared into the depths of the wound.

It requires from two to four weeks for the bladder to close—and occasionally there is some leakage for many weeks.

Tuberculosis of the Bladder-Wall.—Tuberculosis of the bladder-wall is comparatively rare, and is usually associated with tuberculosis elsewhere. When the only or the most conspicuous lesion, it may be treated by suprapubic cystostomy, cureting and packing, followed by injection of iodoform emulsion. The usual internal treatment of tuberculosis must be energetically pushed.

Tumors.—Growths in the bladder may be (1) papilloma, (2) carcinoma, (3) myoma, (4) fibroma, (5) sarcoma, (6) gumma, (7) cysts. Nearly all are character-

ized by hematuria. Diagnosis is made by cystoscopy. Removal by earliest possible cystotomy is the only treatment, save for gummatous tumor, in which potassium iodide may be given, also mercury.

Ulcer of Bladder.—Ulcers of the bladder generally are found close to the urethral orifice. They may be simple (chronic and solitary); acute (perforating); chronic tubercular; syphilitic; cancerous. The three prominent symptoms are increased frequency of micturition, pain in the penile portion of the urethra and hemorrhage. There are also three stages—usually. In the first there is usually some disturbance of micturition; the act is more frequent and passage of water is attended by a burning sensation, particularly marked toward the end, with more or less discomfort felt in the penis. The urine does not show any very marked change, but close examination will show some pus, necrotic debris and exfoliated epithelium. In the second a cystitis begins and there is an exaggeration of all the symptoms. The urine is more purulent and contains more epithelium and debris; the blood, too, is in larger amount. In the third, distension of the bladder occurs, owing to lack of expulsive power; if not relieved by cystostomy the patient dies of ascending infection. Acute perforating ulcer can rarely be diagnosticated antemortem, save by a skilful cystoscopist.

Treatment.—Irrigations with silver nitrate, from 1 in 10,000 up to 1 in 5000 every second day, will usually effect a cure in the first stage. If this does not succeed the ulcer may be cauterized through a cystoscope, or a suprapubic cystotomy made and the ulcer cureted and cauterized with the Paquelin. In the second stage cureting and cauterization with a prolonged drainage through a suprapubic opening are necessary to effect a cure. In the third stage, drainage, irrigation and gradual disten-

sion of the bladder are all that can be done, preferably through a suprapubic opening.

Wounds of the Bladder.—A direct blow may cause rupture of a full bladder; a spicule of bone from a fractured pelvis may penetrate it; a stab-wound of the lower abdomen may enter it; and a metal catheter in rough hands may perforate it. If the peritoneum has been opened at the same time an immediate abdominal section is indicated to close the hole in the bladder by suture and to clean out and wall off the abdominal cavity. But when the peritoneum is not involved it is best merely to clean up the wound, irrigate the bladder thoroughly through a catheter in the urethra and insert a drainage-tube or wick into the bladder through the external wound. In hidden wounds like that from catheter and bone-fragments, suprapubic cystostomy and free drainage must be made without delay; extensive extravasation of urine means death.

BLEPHARITIS

Blepharadenitis.—Inflammation of the Meibomian glands (commonly called “stye”) is best treated by early incision and evacuation of the pus and use of warm antiseptic solutions or compresses, a saturated solution of boric acid being most useful. Styes signify eyestrain. A little mercurial ointment promptly aborts them.

Blepharanthracosis.—This is a carbuncular inflammation of the eyelid. Treatment is the same as for carbuncle (which see).

Blepharoedema.—Swelling or edema of the eyelids may be treated by compresses wrung from some astringent solution. Bad cases may require numerous small punctures, followed by antiseptic solutions.

Blepharoadenoma.—A small adenoma growing on the ciliary margin of the eyelid. Excision as early as possible is the only treatment.

BLISTERS

Usually it is best to cut into the blisters and let out the serum. Then apply some soothing antiseptic dressing which will exclude the air. A most excellent way is to saturate gauze in camphophenol (equal parts of camphor and phenol rubbed together in a mortar just boiled or baked for 20 minutes; the remedy should be kept in a clean bottle), and cover the blister and surrounding surface with several thicknesses, placing rubber-tissue or oiled silk over this and a mass of absorbent cotton over all, holding the dressing in place by a bandage or adhesive strips. This dressing need not be disturbed for three to five days.

BLOOD: TRANSFUSION OF

This operation is again coming into vogue, and under the aseptic technic lives are being saved by it. When a patient has bled to unconsciousness, is pulseless and cold, there may be hope of restoring life if the source of hemorrhage has been corrected. The radial artery of the donator is bared and opened and a small glass or aluminum tube, sterilized, introduced into it and held by a catgut ligature around its end; a little blood being allowed to flow (to determine that the current has been established) the end of the tube is closed and all wrapped in a very hot, moist towel. The basilic vein of the donee is next exposed and opened as for venesection, the distal end tied but the proximal left open. The end of the vein being lifted out sufficiently, blood is permitted to flow from the tube long enough to be sure all air is expelled, and then (with blood still running) the end of the tube is slipped into the vein and tied around with gut. Blood is permitted to flow for about thirty minutes when the vein and artery are each closed by ligation. The dona-

tor's blood will drop from the normal 5 1-2 or 6 millions to near 4,500,000 in that time (hemoglobin from 100 to about 70), while the donee's will rise correspondingly; but the former will be restored to normal in four or five days, only one day's detention from business being required.

BOCKHART'S "BLOOD-SERUM MERCURY"

Another method of preparing mercury so it may be injected beneath the skin is that of Bockhart:

Dissolve 3 grams (45 grains) of bichloride of mercury in 32 grams (1 ounce) of boiling water; dissolve 7 grams (105 grains) of chloride of sodium in 20 grams (5 drams) of water; mix the mercuric solution with 42 grams (10 1-2 drams) of blood-serum sterilized by Koch's method and dissolve the precipitate by adding the salt solution. This makes a three-percent blood-serum mercury. Add distilled water enough to make 212 cubic centimeters (6 ounces and 5 drams), i. e., double the amount of fluid, so as to reduce to a 1.5-percent solution, which is practically unirritating. Of this 15 drops may be injected once daily, equal to gr. 1-4.

BOILS

Aborting Boils.—It is possible to prevent suppuration in a small proportion of forming boils. As soon as the local inflammation is noted the following is to be applied:

Fluid extract of ergot.....	2.0 (dr. 1-2)
Oxide of zinc.....	8.0 (drs. 2)
Phenol	0.5 (grs. 8)
Lanolin	65.0 (ozs. 2)

This is to be spread on gauze or absorbent cotton to the size of a silver dollar, applied over the boil, and held by adhesive plaster. It should be replaced by belladonna

ointment in twelve hours, but may be repeated next day if the boil is still red and painful.

Boils Compared with Carbuncles.—The first is a staphylococcus, the second a streptococcus infection. small boils sometimes may be aborted in their incipency by introducing, with a hypodermic needle or sharp probe, a drop of pure carbolic acid; but this will only aggravate a beginning carbuncle. When a definite pus cavity has formed, simple incision, if good gaping of the wound-edges is secured, is quite sufficient for most small boils and a few larger ones. With the larger kind free incision is needful, and if a small gauze drain is inserted there will be a free exit for the discharge; and in a week, more or less, good granulations form and healing is uninterrupted. According to Rand the tendency to reinoculation of adjacent hair follicles can be prevented and the comfort of the patient promoted by washing the skin with alcohol and applying hot antiseptic compresses of boric acid or weak bichloride solutions. Large boils can be emptied more completely, and better drainage is secured, if a small oval piece of skin is excised.

The best treatment for carbuncles is to thoroughly excise all of the inflamed tissue, burn with pure carbolic acid, neutralize with pure alcohol and then pack with gauze, this being done under anesthesia. Unfortunately, many patients will not submit to such heroic treatment until the disease is far advanced; but if the carbuncle is small, excision under cocaine and ethyl-chloride anesthesia, combined, may be possible. Usually, however, all the patient will permit is incision of the central part of the mass of infiltrated tissue, with multiple incisions in the large carbuncles. Then the application of hot antiseptic compresses will soften the tissues and encourage the separation of sloughs. With the aged vigorous supportive treatment is imperative.

Prevention of Boils.—Whenever the patient is seen early enough, it is always proper to attempt to abort a boil, since such treatment does not aggravate the condition if the effort fails, and much suffering is avoided if the attempt proves successful. The boil should be well covered with a tampon of cotton which is kept saturated with the following solution:

Chloral	10.0 (2 1-2 drs.)
Glycerin.....	20.0 (5 drs.)
Water.	20.0 (5 drs.)

Certain observers, working along the theory of the destruction of the staphylococcus, bathe small boils frequently with a lotion of salicylic acid in alcohol, 2-percent; or a 50-percent plaster of the same, changed four or five times a day to hasten the necrosis in large boils. In furunculosis involving an area of considerable size, a 2 1-2 percent ointment of salicylic acid in vaselin may be applied once a day, after gentle washing with soap and warm water. Either ordinary lime water on compresses covered with oiled paper or silk, or a solution of calcium chloride applied in the same manner, will promote supuration more quickly than the ordinary poultice. A 25-percent solution of ichthyol, applied every two hours, will diminish the area involved in inflammation, and consequently lessen the pain and shorten the duration; while certain experimenters also assert abortive power for the same application. A saturated solution of common baking soda applied on a compress will relieve the pain of a boil at any stage. If applied in the very incipency, 20 grains of silver nitrate in an ounce of spirit of nitrous ether, painted frequently over the inflamed surface, will abort many forming boils. Calcium sulphide should always be given internally and pushed till all the secretions smell of hydrogen sulphide,

Boils may sometimes be aborted by first energetically rubbing the furuncle with the tincture of green soap; then washing it with alcohol (40- to 50-percent); then applying a thin compress of absorbent cotton moistened with alcohol, which is kept in place until the alcohol has all evaporated, then making another application of the green soap, but allowing the lather to dry on the spot, which is then left uncovered. Sometimes it is necessary to repeat this maneuver after several hours. In order to be successful the treatment should be applied early. As soon as it is apparent that suppuration is inevitable, free incision is to be made and the surrounding hair-follicles protected from infection by careful attention to post-operative cleanliness.

Treatment of Boils.—While a single boil is but a local abscess around the root of a hair, by infection of other follicles many other boils may arise. This is more probable when there is a general impoverishment of the system and want of proper elimination. Certain trades, too, predispose to boils, as workers in oil or paraffin, and coal-shovelers. The proper treatment, then, is not only early incision and proper drainage of every suppurative point, but extreme cleanliness of the skin around the abscess, changing of dressings often enough to prevent the pus running over healthy skin. Internally a teaspoonful of effervescent magnesium sulphate four times a day does good, as also do tonics like iron, arsenic and strychnine, as in the “triple arsenates”. Calcium sulphide, given to saturation, is highly recommended and really very valuable, and nuclein is useful. To hasten suppuration (when it seems inevitable) poultices are of undoubted value; and a little extract of opium may be added to allay pain. But after the boil has been widely opened the poultices should not be continued—a simple antiseptic gauze dressing being all that is required. Fre-

quent dressings should be made to prevent the pus contaminating contiguous surfaces. Patients suffering from little boils should be instructed not to scratch or rub the skin near the boil, otherwise pus will be gotten under the finger-nails and other boils produced by transference of poison; hence at night the affected part should be covered to prevent scratching during sleep.

BONE: DISEASES OF

The principal affections of bones are: (1) Inflammation of bone (see "Osteitis"); (2) inflammation of medulla (see "Osteomyelitis"); (3) inflammation of bony covering (see "Periostitis"); (4) necrosis of bone (see "Caries"); (5) osteomalacia (which see); (6) rachitis (see "Rickets"); (7) syphilis; (8) tuberculosis; (9) tumors.

Bones may also become atrophied (in old age and in certain injuries) as well as hypertrophied, but there is no treatment for either. Syphilis will be mentioned under "Caries", and tuberculosis will be discussed under Diseases of the Joints. Tumors found in bone are usually (a) enchondromata, (b) exostoses, (c) myeloid, (d) sarcomata, (e) carcinomata, and (f) cysts. All should be removed as soon as found.

BOW-LEGS

If the deformity be due to mere curvature of the bones it may readily be corrected by simply bandaging tightly to a straight splint on the inner aspect of the leg, tightening the bandage from time to time during the first two years of life. But usually the defect is in the knee-joint; when an appropriate apparatus must be made and fitted to the legs as the child begins to walk, the straps being tightened once in two weeks and the length of the brace increased as the child grows. Cases seen after the bones have hardened (beyond the 5th to 8th year) can be benefited only by operative treatment.

BREAST: DISEASES OF

Breasts: Inflammation of.—Mastitis may yield to the local use of oleate of mercury if it be properly applied before suppuration arises. To the oleatum hydrargyri add a little morphine (the basic alkaloid morphina—not the sulphate, hydrochloride, etc., which are not soluble in oleic acid); a little of the mixture is to be lightly rubbed over the affected area. The rubbing must be very gentle or severe irritation of the skin will follow; indeed, with a very delicate, tender skin it may be better to apply the ointment with a brush. Twice a day is as often as most skins will stand.

Imperfect Operations for Cancer.—In removing carcinoma of the breast there are two chief reasons for return of the disease: (1) Want of care in dissecting out all the fat and glands of the axilla, and (2) leaving too much of the skin over the affected area. Of the first it may be said that a large majority of operators spend too little time in removing the axillary contents—it requires from a half-hour to an hour to get all the tissues out which may possibly be implicated by the cancerous process. Not only the fat and glands of the axilla should be excised—the chain of lymphatics running down beside the long thoracic vessels, those running down behind the scapula and those extending up beneath the clavicle should be removed; indeed, some surgeons now advocate removal of the cervical glands, but this is scarcely needful, unless they can be felt beneath the skin and muscle; and then it is doubtful if any operation at all is justifiable. Of the second it may be said: It is well to cut wide of the affected area, running the risk of having to make a Thiersch graft rather than to leave skin which may be the site of incision-recurrence—which is, I regret to say, a very frequent thing in the work of inexperienced operators.

BRIGHT'S DISEASE: OPERATION FOR

Extensive experimental work in decapsulation of the kidney has proven that: (1) Chronic nephritis should not be operated on until medical treatment has proven of no avail. (2) The time for operation is when it is noticed that the process is advancing rapidly and it is feared that the heart will soon become overtaxed. (3) The operation for chronic Bright's disease which has proven least dangerous, and which has shown the best results, is nephropexy, performed on a single kidney. (4) The most unfavorable cases for operation are those of diffuse nephritis. (5) Cases of general anasarca with bad heart-action should not be operated on; if the heart-action is good, an operation performed as a *dernier ressort* may give the patients a few extra months of life, provided they survive it. (6) Where there has been a marked destructive process in the kidneys, as a result of nephritis, the operation may relieve for a number of weeks or months, but patients generally fail again and die when the new capsule begins to contract.

The operation, since it is as yet purely experimental, should be done by none but a surgeon of great repute, since a fatal termination in the hands of a surgeon with only a local reputation might unnecessarily entail great loss of prestige.

BUBO

Bubonocèle.—This is an inguinal hernia in which the gut or omentum does not extend beyond the inguinal canal. The treatment is the same as any other inguinal hernia (which see). To the inexperienced surgeon it is of chief interest on account of the liability to mistake it for a bubo, particularly when clap or chancroid is found..

Phenol for Buboes—When buboes are seen very early, before any great amount of redness of skin is present, the skin may be frozen with chloride of ethyl and ten drops

of a solution of phenol injected into the middle of each enlarged gland; the solution being of this strength:

Phenol 0.5 (grs. 8)

Distilled water.....32.0 (oz. 1)

The skin should be carefully scrubbed and washed with ether or alcohol before the needle is introduced, and the needle itself should lie in alcohol five minutes before using and then be passed through an alcohol flame on its way to the gland; and the fingers should then not touch the needle until the injection is made, otherwise a staphylococcus infection may result with extensive suppuration.

Treatment of Buboes.—If there be much inflammation, as evidenced by pain, tenderness and especially redness, the swelling and suppuration can be prevented in some cases by putting the patient in bed and applying an ice-bag to the affected surface. If the patient cannot stay in bed the bubo may be painted with several layers of collodion and a compress applied tightly by means of a spica bandage. As soon as fluctuation is detected, cocaine should be injected, the abscess opened freely and all the infected gland removed by cureting. The wound is then packed with gauze, which is removed in twenty-four hours and the pocket filled with some dusting powder, preferably equal parts of calomel and subiodide of bismuth, and an antiseptic gauze dressing applied. The less frequently the dressings are changed, compatible with cleanliness, the sooner will the wound heal, i. e., after granulations have begun to form. Calcium sulphide may be given internally.

Treatment of Sympathetic Bubo.—The name of sympathetic bubo is applied to a bubo resulting from irritation, friction or injury and not from venereal disease. It is to be treated as any other lymphadenitis (which see).

Welander's Treatment.—This is removal of pus (if present) by aspiration, irrigation with 1 in 1000 bichloride solution, and injection of benzoate of mercury solution,

with closure by collodion. It is best employed before sup-puration begins, the mercuric benzoate being injected without aspiration and irrigation.

BURNS

Phenol for Burns.—If phenol (carbolic acid) is to be used for burns—and it is one of the most satisfactory of all applications—it must be in full strength. It causes pain for an instant, followed immediately by a soothing sensation of coolness, because if put on in 95-percent solution (phenol liquefactum) it coagulates the albumin on the surface of the burn, excluding the air temporarily and at the same time acting as an analgesic to the injured nerve-filaments. Before applying it all blisters should be pricked and tags of burned tissue cut away. Gauze saturated in carbolized oil (sterilized) should be put on the burn, many thicknesses, with cotton and loose bandage over all. Morphine and strychnine ought to be given at once hypodermically.

An ointment of one part boric acid to eight of vaseline is excellent to saturate gauze in, to apply next to the burn after removal of the first dressing. Or one may employ the camphophenol liquid made of equal parts of camphor and pure phenol.

• In making the dressings, if the burned area is large, only a small part should be uncovered at one time to prevent chilling. The dressings should not be changed oftener than two or three days unless the discharge is so great as to compel it, or the odor is very annoying.

When granulations are progressing well healing may often be accelerated by skin-grafting, when the burn is extensive.

Severe Burns.—Shock is sometimes profound in severe burns, amounting to total collapse in some instances. As this is dependent in great part on the intensity of pain a

good plan is to give at once as large a dose of morphine as the patient will stand (children cannot tolerate much morphine), usually to an adult 1-2 grain hypodermically with 1-30 grain of strychnine; or better still, a tablet of the hyoscine-morphine-cactin anesthetic, and a second one in two hours if needed. Blankets should be wrapped around the body, and the patient speedily removed to a hospital or his home, where artificial heat may be applied if the shock continues. Here the popular remedy, a "good drink of whisky," is indicated, and it may be repeated in a half hour if collapse continues. Digitalin may also be injected a half hour after the morphine, with glonoin followed by atropine or hyoscyamine if there is shock, shown by pallor and coldness of the skin. Indeed glonoin, atropine and strychnine are generally indicated in shock. A most popular application, used in nearly all great iron-foundries, is "carron oil" of this composition:

Lime water	125.0
Linseed oil	125.0
Phenol	10.0

Gauze is saturated with this and applied to the burned surfaces; and changed every twelve hours. In small burns a saturated solution of carbonate of sodium (common washing soda) checks the pain. The best application is 5-percent aqueous solution of picric acid, clothes or gauze being wrung out of it and applied to all the affected surfaces; but it stains everything a bright yellow which will not come off. Rubber gloves must therefore be used in handling it.

BURSITIS

Inflammation of the bursa is not common. When it does occur it may be of tuberculous variety (a so-called "inflammation") or it may be due to infection with some

of the more active pyogenic organisms (staphylococci and streptococci).

Acute, suppurative bursitis is usually caused by a severe bruise or a penetrating wound, and if not properly treated will extend in a most remarkable manner, involving contiguous tendons, ligaments, joints and even bones. Sometimes by reason of injury to blood-vessels there is an accumulation of blood in the bursa or a mere distension with serum, the membrane itself being thickened but not pus-infected. In case of doubt it is therefore best to aspirate before making free incision; if it be serum or blood, removal through an aspirator followed by long-continued immobilization will effect a cure; but if the fluid be pus free, incision and drainage is the only rational treatment, the earlier the better for the integrity of the neighboring joint.

There is a peculiar affection, described by older writers as "chronic bursitis," though, in many instances, it undoubtedly is not a true inflammation. It is characterized by thickening of the wall by repeated deposits of organized lymph until the whole bursal cavity is finally filled by a tumor of almost cartilaginous consistency. The only treatment is excision under strictest asepsis.

The tuberculous trouble does not differ materially in either character or treatment from fungous synovitis (which see).

CANCER

This is a general term expressive both of carcinoma and sarcoma—any malignant growth is "cancer." Certain forms have distinctive names, as *alveolar* cancer, a carcinoma with an alveolar structure; *colloid* cancer, one containing colloid material; *cancer en cuirasse*, a disseminated, lenticular carcinoma of the skin encircling the chest; *epithelial* cancer, a carcinoma of the epithelial structure, especially of lip and cervix (really all carcinomata are epithelial

cancers); *melanotic* cancer, one containing pigment and generally regarded as unusually malignant.

Cancer "Cures."—About twenty percent of permanent cures follow radical operation as at present practised. This percentage might easily be doubled by early recognition and immediate extirpation. Too many doctors delay in the hope that they have made a mistake in diagnosis; using palliative or delusive curative measures. If they would but remove the growth first and use the "remedies" afterward, many more lives might be saved. Trypsin has recently attracted much attention; but while it is true that cancer-cells are easily dissolved by trypsin and some patients have improved greatly under its hypodermic use, no absolute cure has yet been reported, and the question of its beneficial action is still *sub judice*. Radium, too, is still under trial—with probabilities all against its general usefulness. The Finsen light has proven of value only in superficial growths which are far better burned out with the Paquelin cautery. As for the X-ray, its curative influence has been greatly overestimated except in skin-cancer and lupus; in truth, it may now be positively said that for extensive carcinoma the Roentgen ray exercises no actual curative effect, its advantage being only in the fact that it exerts a beneficial analgesic effect, and in ulcerating tumors also causes a diminution of the offensive discharge; in many cases there is a temporary recedence of the nodules, but never a lasting effect. All of these, then, should be reserved for use after excision of the malignant growth. The latest addition to possible curative agents is a serum taken from sheep inoculated with cancer; but until the cause of carcinoma can be determined and isolated, little is to be hoped from the use of sera. When extirpation is impossible on account of location or extent of the tumor, palliative operations are justifiable; ligation of the carotid in huge cancer of the neck may arrest its

growth for months; gastroenterostomy for cancer of the pylorus often prolongs the life of the patient for many years; vaginal hysterectomy may give great comfort and add years to the life of a doomed woman; and so on through the list. Just because a diagnosis of cancer has been verified a doctor should not abandon the victim to his fate—much may be done to encourage, to alleviate, and to prolong life.

Condurango in Cancer of the Stomach.—In inoperable cancer of the stomach conduragin, the glucoside which is the active principle of condurango, is worthy of trial, great improvement having been recorded under its influence. It may be obtained in the form of a granule containing one milligram (gr. 1-67). One may be given from three to six times a day when there is the least food in the stomach; best dissolved in a little water just before taking. Small doses of sulphate of codeine should be given at the same time if there be much pain. But it should be remembered that the presence of a pyloric tumor is no longer regarded as prohibiting operative treatment: a palliative gastroenterostomy at least often may be performed with great benefit.

Cure of Mediastinal Carcinoma.—Pfahler, of Philadelphia, has reported six cases in which carcinoma of the mediastinum developed after cancer of the breast. All of the patients had been operated on previously. They were treated by x-ray and three have apparently recovered.

For Inoperable Cancer.—A very good local application to cancer (especially of the breast) is an ointment containing morphine and atropine; and better for its soothing effect is the old-fashioned conium poultice. This may be made from the fresh leaves, or one-half ounce of the succus conii may be added to an ordinary bread poultice.

Marsden's Paste for Cancer.—The celebrated "Marsden's paste" used by most "cancer doctors" consists of

Arsenous acid	1 ounce
Powdered acacia.....	1 ounce
Water	5 drams

Some of this arsenical mucilage is smeared over the malignant growth morning and evening, care being taken not to cover healthy skin. Separation of sloughs is encouraged by poulticing, which also gives temporary respite from suffering, because the arsenic causes intense destructive inflammation. Absorption is not possible if plenty be applied; a small quantity on a raw surface might lead to arsenical poisoning, but a large amount produces such severe inflammation that perfect safety is assured, since inflamed tissues lose the power of absorption. But the treatment is very painful and tedious and so has fallen into well-deserved disuse by the regular profession. One can do in five minutes with the Paquelin cautery without pain (under cocaine) what the cancer quacks require weeks of terrible suffering to accomplish.

Methylene-Blue for Cancer.—After the excitement over reported cures of cancer by use of pyoktanin subsided, a few careful investigators continued their experimental treatment upon inoperable carcinoma. It has been conclusively demonstrated that the internal use of methylene hydrochloride in pill form is followed by remarkably good effects. The dose at the beginning is 2 grains daily, to be gradually increased to 3, 4 and 6 grains. To relieve the strangury sometimes produced, it is necessary to combine with the pills 3-4 grain of extract of belladonna distributed over the twenty-four hours. Arsenous acid, strychnine, or a cathartic may, if necessary, be incorporated in the prescription. The patient must be warned that the urine will turn blue and will

permanently stain clothing. In some instances the patients gain remarkably in weight and strength and the tumor-mass may be decidedly reduced in size. Life has, apparently, been prolonged from two to eight years, but no patient has been cured.

Prevention of Cancer.—While we have not yet learned the remote cause of cancer, certain things have been demonstrated as the direct cause; an avoidance of these may prevent the appearance of the malady in those predisposed to its development, as well as ward off a return in those patients who have been subjected to operation. The directions given by Keetley are: (1) Sterilize all food. A large proportion of cancers attacks the alimentary canal, and especially the parts where food and feces tarry. (2) Insist upon sufficient and regular toilet and protection of the nipples and of the genitalia. It is significant that these organs are especially often polluted by stale secretions and discharges, and are more frequently handled by their owners than any other part of the person usually covered by clothing. (3) Order due care of the mouth and teeth. (4) The dressings of discharging malignant sores and tumors should be burned, and patients and attendants must be instructed especially not to pollute either the fingers or the underlinen. (5) Non-malignant sores and tumors should be cured, and especially not allowed to drift on if chronic. (6) Cancerous and doubtful tumors and ulcers should be excised promptly. (7) Abstinence should be practised from alcohol, tobacco, and from foods which leave waste products, of which the kidneys, the bowels, and the skin can not easily and thoroughly get rid, and which thereby provoke and sustain the chronic inflammations and ulcers which so often pave the way for cancer. (8) Physical familiarity should be avoided, except with those who are nearest and dearest to us. (9) Much thought should be

given, especially by mistresses and housekeepers, to the service as well as to the cooking of food, with a view to disease-prevention. Special attention should be paid to the sterilization of milk and its products: cheese and butter.

Radium Treatment of Cancer.—McFarlane's investigation shows that of the many thousands of cases of cancer subjected to the radium-treatment 13 rodent ulcers were reported cured, 14 epidermoid cancers cured, 1 malignant wart cured, 11 cases of cancer of the esophagus slightly improved, 27 carcinomas unaffected, 1 malignant wart unaffected, 1 malignant mole unaffected, 1 rodent ulcer unaffected. The advantages of radium are its portability, and the ease with which it can be applied and accurately localized." From the foregoing summary we may conclude that it has a distinct, though altogether very limited, field of usefulness in the treatment of malignant disease. Its action is similar to that of the Roentgen ray, but much weaker. It is preferable to the Roentgen ray in the treatment of small rodent ulcers, and is available for use in inaccessible cavities.

Trypsin in Cancer.—Results from the use of trypsin in cancer are not yet definite. The best report yet published is that of Morton who instituted a series of experiments consisting of the consecutive use of trypsin in a group of about 30 cases of cancer, both hospital and private. Two of these, patients with facial cancer, are cured to date. In one case, a remarkable process of retrogression by degeneration and atrophy of a carcinomatous breast-gland to final and curative obliteration, has been demonstrated microscopically. In all cases signs of amelioration in the progress of the disease have been observed. It has been demonstrated that both local and constitutional reaction may be produced by the use of trypsin. Enlarged glands have rapidly diminished in

size. Trypsin has a decided effect, Morton declares, in reducing cancer cachexia, and in improving the general health. Even in severe cases of uterine cancer involving the associated pelvic organs the disease may be brought to a halt. The influence of amylopsin seems to have had much to do with favorable results.

CANCERUM ORIS

This disease, frequently called "noma," has been described as a gangrenous stomatitis, or gangrenous ulceration of the mouth, though it is not a true gangrene. It is a disease of early life, attacking children between the ages of one and five years, and consists of foul, deep ulcers of the mucous surface of the cheeks or lips. While there is no pain, general weakness is pronounced and unless the disease is quickly checked the child dies from exhaustion or from septic fever. Under perfect anesthesia the ulcer must be burned with the Paquelin cautery to the uttermost recess, and then dressed as a simple burn. As the disease is due to general debility, good food and tonics are radically indicated. Alcoholic drinks (wine) and strychnine with triple arsenates do good if accompanied by proper food. The wound, though large, will heal by granulation if kept covered by antiseptic dressings, but changed often on account of wetting by saliva. Any tendency to spread at some particular point must be combatted by instant, and free, use of cautery.

CANKER

Canker is a name used by the laity to mean an ulcer in the mouth: ulcerative stomatitis. If the ulcer be burned twice or three times in a week with pure nitrate of silver and a mouth-wash of saturated solution of potassium chlorate given, the "canker" will readily heal in a few days.

CARBUNCLE

From a streptococcal infection in the deeper layers of the skin there is formed a hard, circumscribed, painful inflammation of the subcutaneous cellular tissue, with tendency to form several openings through the skin. It is much more serious than a boil (a simple staphylococcus infection) and is accompanied by chill, fever and decided constitutional symptoms, chief of which is profound weakness; indeed under old lines of treatment it was presumed that a carbuncle in an old person meant death. It certainly does not if he will submit to radical operation: excision of all implicated tissue under complete anesthesia, the knife not being allowed to touch infected tissue; if this is not permitted the next-best thing is to eradicate it thoroughly by burning with the Paquelin cautery under cocaine anesthesia. If neither can be done, the mass should be split deeply from side to side, with a cross-cut from top to bottom, and kept covered with ichthyol and belladonna ointment until the infected mass (popularly called "the core") drops out, when it may be treated as a simple sore. Stimulants and two-decigram (three-grain) doses of quinine four times a day with two milligrams (1-30 grain) of strychnine sulphate should be ordered, together with a most nourishing diet.

Belladonna for Carbuncles.—A most soothing, agreeable application for a forming carbuncle is equal parts of extract of belladonna and ichthyol smeared on cloth and applied to the inflamed area and an inch or more of adjacent skin. If used early, suppuration sometimes is arrested, and always much suffering is prevented.

To Reduce Suppuration.—During the progress of a carbuncle it is advisable to administer a centigram (1-6 grain) of calcium sulphide every hour during the height of the fever and discomfort; and about 25 cg. (1-2

grain) four times a day later on. It seems to prevent the formation of new foci as well as to reduce the amount of local inflammation, quickly liquefying the central mass and promoting the formation of healthy granulations. It is claimed that if given before suppuration begins the process is arrested, and a hard lump forms at the site of streptococcus infection—a lump which disappears in a few days without suppurating.

CARCINOMA

Defined as “a malignant tumor characterized by a network of connective tissue whose areolæ are filled with cell-masses resembling epithelial cells”. (Gould). According to variation in location cancer appears under several distinct types.

Alveolar.—One with an alveolar structure, i. e., little pockets, or cysts, filled with cancer-cells.

Carcinoma Tuberosum.—Scirrhus in which the nodules are of very large size. Rare.

Benign tumors sometimes undergo a cancerous change, or “degeneration;” their names being added to carcinoma, thus, adenocarcinoma, etc.

Every tumor suspected of malignancy should be removed, particularly in the breast. Only in early excision is there hope of cure; decidedly applicable to cancer of the uterus.

If consent can not be secured to early removal, burning is next desirable: preferably with the Paquelin cautery. This is especially useful for superficial epitheliomata.

Pastes (Marsden's, Cauquoin's and others) do the same thing as the Paquelin but take weeks to accomplish what the Paquelin does in five minutes, and are very painful; many times unsatisfactory.

The x-ray may be used for cases too far advanced for operation, for superficial growths and ulcerations and

for recurrent growths after removal. *It must never be used as the treatment of choice in any case amenable to operative treatment.*

Radium has given no cures as yet. Like the Roentgen ray, however, its use gives surprising relief from pain, retards the growth and helps sustain the patient.

Tonics and stimulants are indicated always.

Morphine must be given in inoperable carcinoma—to any extent needed to alleviate pain. It is very reprehensible to withhold opiates in hopeless cases on merely sentimental grounds. [See “Cancer.”]

Colloid.—A form found in the alimentary canal, uterus, peritoneum, etc., in which the delicate connective-tissue stroma is filled with colloid material, i. e., a jelly-like material thicker than mucus, filling the alveoli.

Encephaloid.—A type of rapid growth, made up of a small amount of stroma and large alveoli, with a greater number of cells and blood-vessels than the other varieties.

Epithelioma.—A carcinoma of skin or mucous membrane.

Lipomatous.—One which contains cells infiltrated with fat.

Medullary.—Another name for encephaloid.

Melanotic.—One in which the cells are filled with pigment, sometimes until appearing almost black.

Scirrhus.—A hard, slow-growing cancer, most often found in the breast, consisting of a stout, fibrillated stroma, closely filled with large, nucleated cells.

CRIES

Necrosis of bone may follow injury if there be infection by pus-germs or by tuberculosis. The inflammatory process may be so slow as to warrant the expression “chronic,” the inflammation being followed by rarefaction or absorption of much of the bony tissue; and usually

succeeded by formation of pus. Sometimes as a result of a severe blow a part of the bone is splintered off (spicula) in such a way that its nutritive arteries are all ruptured; in which case molecular death occurs—followed later by pus-infection in most cases.

When the necrosis is due to tuberculosis the condition is described as *caries fungosa*, the sequestrum or point of absorption being covered with granulations which grow from the inner surface of the cavity.

Occasionally instead of the tuberculous cavity being filled with pus there is found a condition known as *caries sicca*: a dry necrosis with obliteration of the joint, accompanied by sclerosis and concentric atrophy of the articular extremity of the joint.

In most cases of caries there is nothing to be done except to cut down upon the affected part, remove by curettage or otherwise all of the dead bone, pack with iodoform gauze and cause the cavity to close by healthy granulations. The earlier this can be done the better the ending.

The only exceptions to this rule of practice are, perhaps, destructive osteitis of the spine (Pott's disease) and destructive tuberculosis of the hip (hip-joint disease). Even in these cases operation is sometimes advisable; but the results are usually deplorable and lead to censure of the operator.

Caries of the Acrómion.—This is very rare. Treat by cureting and packing, avoiding opening the shoulder-joint. Weak joint is to be predicted.

CARTILAGE: DISEASES OF

Chondralgia.—Pain in or about a cartilage is always suggestive of a tuberculous focus; but then it is a dull aching, while chondralgia is acute, sharp, like neuralgic pains elsewhere. The treatment is the same as for neuralgia: anodynes temporarily (acetanilid, codeine, etc.) with strychnine.

nine and iron to improve the general condition. In unyielding cases chondrectomy has been practised; but excision must be reserved as the *dernier ressort*.

Chondritis.—Inflammation of a cartilage can hardly be differentiated from synovitis (which see).

Chondromyxoma.—A tumor made up of cartilaginous cells (chondroma) with also mucous elements present (myxoma). Treatment: excision.

Chondrosarcoma.—A tumor of mixed cartilaginous and sarcomatous tissues. Early removal.

CASTOR OIL: TO RENDER PLEASANT

Some surgeons insist that nothing can take the place of castor oil as an easy purge both before and after operation. To them this method of disguising its taste (advised by Carleton) will be of interest:

Vanillini	grs. 20
Olei menth. pip.	dr. 1
Saccharini	drs. 1 1-2
Alcoholis	ozs. 3
Tinct. persionis	oz. 1-2
Olei ricini, q. s. ad	gal. 1-2

Dissolve the vanillin, oil of peppermint and saccharin in the alcohol. Add the tincture of cudbear to the oil and shake thoroughly. Finally unite the two mixtures. This mixture looks well, tastes well and is pleasant to take.

CATGUT: IODINE

Catgut prepared by the iodine method is rapidly gaining in popularity among many operators. The advantages claimed for it are: (1) If properly handled it is absolutely sterile. (2) In the course of its preparation it does not lose any of its tensile strength. (3) It is readily and simply prepared and without any undue expense. (4) It should be absorbed completely, but only after it has served

the purposes for which it is introduced. The method of preparation is that of Bartlett: the gut immersed for eight days in a mixture consisting of tincture of iodine, one part, proof spirit, fifteen parts. Bacteriological investigation shows the gut to be then sterile. It can be stored indefinitely in the solution in which it is prepared without becoming brittle. It is soft and very nice to handle.

CERVICAL RIBS

A peculiar form of (usually) bilateral cervicobrachial neuralgia depends upon cervical rib-formation. The pain starts at the back of the neck and radiates into the arms, and the slightest movement or touch is agony. Outside of the attacks passive movements of the head to right or left are possible without pain, but bending forward causes pain localized in the cervical ribs and shoulders. The pains appear at once on reclining, and the patient nearly always has learned to sleep in a chair. Large doses of morphine have scarcely any influence. In such cases the Roentgen ray will show a cervical rib on each side, corresponding to the seventh cervical vertebra. The trouble sometimes does not manifest itself until the patient begins to have the senile stoop—the kyphosis impinging upon the nerves. Extension treatment, restoring the vertebræ to their natural position, has done good service and rendered cervical measures superfluous; in others removal of the rib is the only means of relief.

CHANCRE

This term was formerly used to express any sore of venereal origin. Now its meaning is limited to the initial lesion of syphilis. It is also called "Hunterian chancre," "hard chancre" (to distinguish it from chancroid, the softer sore). It should be remembered that the chancre may be located not alone upon the sexual organs, but in

the mouth, the anus, etc. Authorities upon syphilis now agree that there is nothing gained by excision or other treatment of chancre; as soon as its true character is ascertained mercury must be begun. (See "Syphilis".)

CHANCROIDS

These are contagious ulcers, inflammatory in type, not syphilitic, with a tendency to continue indefinitely and spread by infection of any abraded surface receiving their discharge. They are not serious if properly treated before large areas are involved, thus forming the so-called "serpiginous chancroid" or "phagedena."

The best treatment is: Inject a few minims of a 2-percent cocaine solution; the needle must be boiled for twenty minutes after using! Then burn thoroughly with Paquelin cautery at bright-red heat. Besides being more efficacious than any other method of cure this possesses the advantage of being something tangible for which the patient is more willing to pay than for a mere application. Some patients, however, object to the cautery; such may be treated by cauterization with nitric acid, applied by means of a little absorbent cotton wound around a wooden tooth-pick; but the burning must be thorough to insure perfect cure. If the cauterization be done soon enough and of sufficient degree, once will be enough. When the ulcerated surface is very extensive, cocainization should not be attempted; the work ought to be done with the patient in full surgical narcosis.

Formerly Ricord's paste was much used. Its composition is: sulphuric acid with enough powdered charcoal added to make a thick paste. This is applied to the ulcer freely. After a few days the charcoal drops off, leaving a healthy, granulating surface if the acid has done its desired duty. It is painful, whereas the cauterization by Paquelin cautery is attended by singularly little pain.

After the burning, or after the paste has dropped off, a simple antiseptic ointment may be applied. Iodoform is much employed by genitourinary men, but on account of its unpleasant odor other iodine salts of bismuth or calomel may be substituted. A good formula is:

Bismuth subiodide 8.0 (drs. 2)

Vaseline.....32.0 (oz. 1)

This is to be applied three or four times a day.

When the patient is in excellent health and the chancre a merely superficial ulceration, burning may sometimes be omitted. In such cases the ulcer must be cleaned once daily by hydrogen dioxide, full strength, dried carefully and dusted with a powder consisting of equal parts of bismuth subiodide and boric acid. If there be an unusual amount of discharge tannic acid may be added; thus:

Bismuth subiodide8.0 (drs. 2)

Boric acid8.0 (drs. 2)

Tannic acid4.0 (dr. 1)

A little of this may be applied three or four times a day.

The chief objection to this mild course of treatment is the constant danger of the trouble suddenly spreading and the even greater one of the formation of buboes. So long as there is a trace of the chancroidal poison left in the ulcer these dangers persist; therefore the more energetic method is always the safest, and in the end is the speediest way of cure. And it is imperative whenever a chancre previously doing well suddenly begins to spread.

Sometimes when first seen the tissues around the chancre are quite hard, tender and inflamed. It is then best to put the patient to bed and use hot, antiseptic fomentations: cloths wrung out of hot solution of phenol, 5 percent; or one dram of nitric acid to the pint of water may be used instead—the growth of all pathogenic bacteria is inhibited by acids.

Buboes.—When chancroidal buboes form the glands should be protected by a gauze pad applied with slight pressure of bandage. When the glands continue to enlarge they may be painted with iodine once or twice; and if they become hot and painful lead and opium wash may be applied. As soon as suppuration is detected the abscess must be *freely* opened and treated just as any other abscess. If it assume a chancroidal or phagedenic character it must be managed just like the original chancroid. (See “Bubo”.)

Phagedena.—When the chancroid extends rapidly, with alarming destruction of tissue, free cauterization must be done immediately. A few hours' delay may mean extensive sloughing, necrosis extending to the thighs or to fatal perforation of the abdominal walls (occurring in the worst neglected cases). Every part of the ulcer must be burned—every little nook and corner, every sinus laid bare. The extensively charred surface must then be treated as any other burn, i. e., by antiseptics and exclusion of air. After it is found that the sloughing has been arrested the wound should be dressed as rarely as possible, as each manipulation interferes with granulation.

To weakened patients good food and strong tonics must be given—iron, quinine and strychnine being best.

CHILBLAINS

A good application to chilblains is tincture of chloride of iron, full strength, at bedtime. Perhaps a better treatment is to bathe the feet in hot water with a tablespoonful of salt added to each quart; dry carefully and rub in this ointment:

Menthol	1.0 (grs. 15)
Ichthyol	4.0 (dr. 1)
Vaseline.....	32.0 (oz. 1)

In the morning a simple footbath with soap and water should be taken. In three or four days the trouble should

entirely disappear instead of being a source of annoyance all winter.

An ointment of one part of chlorinated lime and nine parts of petrolatum is very useful in chilblains. It often quickly cures the most obstinate cases.

A celebrated plaster for the cure of chilblains is "De Rheim's plaster;" it has this composition:

Capsicum pods.....32.0 (oz. 1)

Strong alcohol64.0 (ozs. 2)

Macerate for several days and add

Mucilage of acacia64.0 (ozs. 2)

This is to be well stirred and brushed over sheets of silk or tissue-paper and applied to the chilblain, the skin over which must be unbroken, however.

CHOLANGITIS

Inflammation of a bile duct is rarely to be distinguished from cholecystitis, there being the same ague-like chill, fever, sweating and jaundice which accompany the more extensive trouble; indeed it is doubtful if even the medical examiners of the Civil Service Commission can make other than a theoretical differential diagnosis. But it matters not—the therapy is the same. (See "Cholecystitis".)

CHOLECYSTITIS

Inflammation of the gall-bladder is almost always due to infection of an abraded surface by the bacillus coli communis, so the spilling of a few drops of pus during operation is not greatly to be feared, the healthy peritoneum can usually take care of much pus of such origin; but it may also originate from infection by typhoid bacilli, by those of epidemic influenza and by the two chief pus-producers: staphylococci and streptococci. The occurrence of jaundice is a mere incident—not more than ten percent of all gallstone cases have jaundice, though occlusion of

the cystic duct by gallstone is an almost constant accompaniment of cholecystitis, icterus appearing when the common duct is closed either by stone or inflammatory swelling. The relation of gallstones to cholecystitis has not been definitely determined; certain it is that calculi often form as the result of a cholecystitis which does not go on to abscess-formation because the duct is not clogged; and equally sure is it that the stones later may so injure the mucosa that secondary infection occurs with the formation of abscess of the most threatening character. The treatment to be adopted, then, must depend upon the stage to which the inflammation has progressed: that of a simple, non-obstructive cholecystitis differing materially from that indicated in an abscess of the gall-bladder. It is in the treatment of a non-suppurative cholecystitis, perhaps with a temporary blocking of the common duct, and its consequent icterus ("catarrhal jaundice" as it is frequently called), that the most brilliant results are obtained by internal medication; with the claim that "gallstones" may be "cured" without operation. The truth is that a gallstone in a normal gall-bladder amounts to no more than a piece of gum in a healthy mouth! By proper therapy the majority of cases of cholecystitis may be cured and the unremoved stone causes no further trouble perhaps for many years or always. This proper treatment consists in the use over a long period of time of sodium succinate, which if persisted in will prevent recurrences of the attacks. The paroxysms may usually be relieved by glonoin, hyoscyamine and strychnine. In very severe cases the H-M-C combination is most effective.

Cure of Cholecystitis.—Most surgeons experienced in surgery of the gall tract now know that simple removal of gallstones does not cure all the trouble in most cases. Dr. Hugh Taylor, of Richmond, in a good article entitled "The Scope of Surgery in Bile-Duct Infections," remarks:

"cholecystostomy removes the gallstones, but in the recorded experience of many does not cure the patient. Why? Because it does not cure the cholangitis and cholecystitis.

Cholecystectomy often leaves an infectious inflammation involving the cystic, common or hepatic ducts and their ramifications. More and more the conviction has been forced that even in uncomplicated cases removal of the gallstones does not give satisfactory end-results because we have only eliminated one of the sequences and not the disease. A study of this subject at the hands of those whose opinions merit our greatest consideration impresses the fact that the key to success is drainage (by cholecystostomy or through the hepatic or common duct), prolonged drainage, until the infections in the gall-bladder and ducts have subsided." Dr. Maurice Richardson tersely puts it: "From study and experience, therefore, I am led to the conclusion that the essential thing in the surgery of the biliary tract is full, free drainage, allowed to persist until it closes spontaneously." Moynihan, in his work on "Abdominal Operations," page 526, writes: "The great principle which has to be carried out in all gallstone surgery is drainage," drainage to prevent leaking, "and cure that condition of the mucosa (stone-forming) which was responsible in the first instance for the formation of gallstones." Therefore cases not yielding promptly should be operated on.

Cholecystitis: Therapy of.—Bilein is helpful in inflammation of the gall-bladder and for gallstones not subjected to surgical treatment. It consists of the alkaline salts of the bile-acids, the active agents of the bile. The dose is from one to three centigrams, four times a day (1-8 to 1-2 grains). It is often given in combination with an equal amount each of calomel and podophyllin, making an active hepatic stimulant and so-called cholagog. When given alone it should be followed by a saline laxative. Of course for entire arrest of symptoms it is important

that the patient be given a long course of treatment with sodium succinate—for a year if necessary.

Treatment After Cholecystostomy.—After the gall-bladder has been opened and drainage established the external layers of gauze and cotton must be changed as often as they become soaked with bile, blood or mucus: about every four to six hours the first day and twice daily thereafter; but the layers of gauze next the wound should not be disturbed until the third or fourth day, when the drainage may be withdrawn. Next day the gall-bladder may be washed out with peroxide of hydrogen, but no water; a small strand or wick of gauze may be inserted into the opening, but care must be taken that it does not slip into the gall-bladder; in one of my cases a long piece of iodoform gauze was carried in the gall-bladder more than two years (with no discomfort save the annoyance of a fistula which would discharge a little bile and mucus every few weeks). After gallstone disease the gall-bladder should be drained three weeks, great care being exercised not to infect with staphylococcus or streptococcus, i. e., plenty of bichloride gauze (1 in 2000) must be used at each dressing, and hands and syringe must be sterile; it is best to use rubber gloves in changing the dressings, as they may be rendered sterile very easily. Internally calomel should be given as early as the third day, and thereafter the bowels kept loose by podophyllin, or saline laxatives.

Typhoid a Cause of Cholecystitis.—Inflammation of the gall-bladder due to infection by the typhoid bacillus is quite common and may lead to abscess. In most cases of cholecystitis, however, there is mixed infection of the typhoid bacillus and colon bacillus or typhoid bacillus and staphylococcus. The abscess may not develop until many months after the typhoid fever. The Eberth bacilli may be present not only in the contents of the gall-bladder but also in its walls, there sometimes

being necrotic patches caused by the bacilli, and rarely perforative peritonitis occurs from this origin. There can be little doubt that gallstones owe their origin to infection of the gall-bladder by the germs of typhoid. Strange to say, a serious cholecystitis may originate from infection with typhoid and colon bacilli, go on its course without symptoms other than trifling discomfort, and end in perforation before the patient sends for a physician. Rarely a tumor is known to be present (a distended gall-bladder containing bile mixed with mucus and pus), but there will be little complaint until rupture occurs, with profound shock and intense and sudden pain, the latter generally at the inguinal region.

Opening the abscess and establishing free drainage constitute the proper treatment.

CHORDEE

During gonorrhea painful erection is liable to occur, the penis being bent downward by the unyielding inflamed urethra. Application of ice affords the quickest relief, but it is objectionable because the reaction following it may lead to worse chordee. Wrapping very tightly with a narrow bandage, beginning at the glans, is better, followed by two grams (30 grains) each of potassium bromide and chloral in 4 ounces of water, given by the rectum.

Prevention of Chordee.—For the prevention of chordee during the acute stage of gonorrhea, gelseminine is worthy of trial. A tablet of a half milligram (1-134 grain) may be given every two hours during the day for several days; with it should be given a tablet of caulophyllin containing one centigram (gr. 1-6). The urine should be kept bland and unirritating by the use of sandalwood oil or copaiba, or by lithium benzoate, one decigram (or about two grains) four or five times a day. Large quantities

of water should be drunk and alcohol scrupulously excluded until the severe stage of clap has passed.

CICATRICAL DEFORMITIES

Deformities due to contraction of scar-tissue are generally best left alone. Rarely the scar can be dissected out and healthy skin brought from a nearby part to cover the denuded area. If done with such perfect asepsis as to secure healing by primary union the operative procedure may succeed; but if suppuration occur the secondary scar may be worse than the original.

CIONITIS

Inflammation of the uvula is not very common, but gives much discomfort when it does occur. Perhaps the best application is a saturated solution of potassium chlorate with a little tincture of hydrastis added. It may be used as a gargle. When the attacks are often repeated, as may be, the uvula should be amputated, about two-thirds being removed. The hemorrhage may be checked by using antipyrin powder on a pledget of cotton; or if excessive, by ligature. Removal is especially indicated if there be *cionoptosis*: prolapse of the uvula.

CIRCUMCISION

This must be performed in every case of balanitis in concealed chancre, in all chancroids when the glans cannot be readily exposed, in paraphimosis and most cases of phimosis. Many nervous symptoms of childhood depend upon or are aggravated by retained smegma and adherent prepuce; many inveterate masturbators owe their trouble to the same cause—so every boy's prepuce ought to be examined from time to time and early circumcision made in every case where there is any serious trouble present. Practically all doctors are too careless about this matter.

CONDYLOMA

This condition (known also as moist wart, fig-wart, cauliflower excrescence and venereal wart) is properly designated *verruca acuminata*. It is a warty growth which occurs in parts subjected to maceration in sweat, or bathed in venereal secretions or mucous discharges, like the genital and anal folds and the vulva. The warts may be flat or acuminate, whitish, pinkish or reddish, pedunculated or sessile; usually they are more or less associated groups or masses of vegetations smeared with a nasty secretion. They bleed on manipulation.

Genital Condylomata.—Condylomata of the genitalia are most easily removed by use of the Paquelin cautery. But sometimes patients object to anything which can be regarded as an operation even though done under local anesthesia. In such a case the growths may be touched with pure acetic acid, without great pain; and the patient directed to keep the affected parts constantly moist with a solution of one dram of the acid to a pint of water.

Acetic acid, pure.....	4.00
Water	500.00

Under this treatment the warty growths will speedily and painlessly disappear. When the affected area is extensive, excision and cauterization are indispensable.

CONJUNCTIVITIS

It is now pretty generally agreed among ophthalmic surgeons that protargol is a more satisfactory agent than either argyrol or silver nitrate for the treatment of acute mucopurulent conjunctivitis, and that argyrol is better than silver nitrate. Protargol is perfectly safe up to 33 percent, and may probably be used in even stronger

solutions. Its application causes much less pain than silver nitrate, but more than argyrol. Silver nitrate in strong solutions is a very dangerous agent.

CONSTIPATION FROM MECHANICAL CAUSES

Gant calls attention to the necessity for considering the mechanical causes of constipation, which are often overlooked, and the trouble attributed to the better-known causes. In this class of cases, no matter how much time is spent in trying to educate the patient and improve his general condition, it is impossible to secure the desired result until the obstruction is removed. To accomplish this it is usually necessary to resort to some operative measure. The following are the most frequent mechanical causes of constipation: congenital deformities, which occur oftener in the rectum and at the anus than elsewhere in the gut; extraintestinal pressure, from uterine displacements, tumors, inflammatory disease, etc., which cause constipation by compression; strictures; malignant and nonmalignant neoplasms; foreign bodies, either swallowed or formed within the gut; fecal impaction.

CONVALESCENCE

Iron Tonic for Convalescents.—Patients who have lost much blood often do better during convalescence if given arsenic at mealtime and a good iron mixture an hour afterwards. A most excellent combination is the following:

Tincture of iron chloride...10.0 (drs. 2 1-2)

Dilute acetic acid..... 8.0 (drs. 2)

Syrup112.0 (ozs. 3 1-2)

Whisky384.0 (ozs. 12)

Mix thoroughly and add:

Ammonium carbonate..... 1.5 (grs. 20)

Direct: A tablespoonful one hour after each meal.

Chemists will declare this is an "impossible" prescription,

on account of the chemical changes which take place on mixing. But if the bottle be corked tightly at once and kept corked between doses it makes the most agreeable liquid iron-mixture there is, patients often asking for "another bottle of that nice 'wine' tonic."

Nux Vomica During Convalescence.—After serious operation the tongue may remain covered with a pasty, white coating for many days after all disturbance from the surgical work has subsided; the appetite being a little slow in appearing. This does not mean chronic sepsis, even of mild degree, but may be ascribed merely to the stomachic disturbance which is like that attending cirrhosis of the liver when the condition of the tongue is precisely similar. One centigram (1-12 grain) of calomel may be given every hour until the bowels move freely; and next day one or two drops of the tincture of nux vomica in half of a glassful of water every two hours. After twenty-four or forty-eight hours of this treatment the tongue will clean, the appetite return and the general condition improve rapidly. This is of particular interest in abdominal section without drainage where the conscientious surgeon, whatever his experience, is always a little anxious until the bowels are moving freely and the tongue has cleaned.

The Ideal Tonic for Convalescents.—But all things considered probably the best tonic medication is to be procured in granule form, and for this purpose it is hard to find a better formula than the "triple arsenates with nuclein." Its formula is: Strychnine arsenate, gr. 1-134; quinine arsenate, gr. 1-67; iron arsenate, gr. 1-67, with 4 drops of nuclein solution. To the tonic properties of strychnine and quinine are added the blood-making elements, with iron and arsenic, with the cell stimulant, nuclein, which is particularly useful in these cases. If the appetite is poor give quassin, hydrastin

if the mucosa needs stimulation, while if the gastric secretions are inactive hydrochloric acid may be indicated. Attend always to the condition of the bowel.

Tonic During Convalescence.—The prejudice against pleasant medicines such as tablets, granules, elixirs, etc., which is found in some communities, must not be met by a flat refusal to use the kind of medicines to which the people have been accustomed; a campaign of education is best, gradually supplanting the nasty by the nice. In every such locality will be found individuals who demand “bit-
ters” to be taken during convalescence from operations, etc. To such the following may be given—to their entire satisfaction.

Dilute nitrohydrochloric acid.....	8.0
• Tincture of nux vomica.....	4.0
Compound tincture of cardamon.....	64.0
Compound tincture of gentian.....	164.0
Whisky	128.0

Direct: One tablespoonful before each meal. It certainly makes the patient eat.

CORNEAL ULCERS

Every ophthalmic surgeon will probably agree with Jones that every injury of the cornea should be assumed to be infected. ~~The~~ eye should be promptly irrigated with a saturated solution of boric acid, or bichloride of mercury solution, one in four thousand, and kept as nearly aseptic as is possible by the free use of a bichloride and salt ointment containing bichloride of mercury, one-fifth grain, and sodium chloride, one grain, to vaseline, one ounce. If pain is a factor, one may add five grains of cocaine, allowing the druggist to use a small quantity of liquid albolene better to enable the cocaine to dissolve. If the injury is as much as twelve hours old and the proper antiseptic precautions have not been taken, it is well to

touch the wound with tincture of iodine applied by a few shreds of absorbent cotton wound around a small probe or smooth wooden toothpick. All applications to the cornea being painful, a previous instillation of a four-percent solution of cocaine should be made.

When the ulcer has declared itself, the first procedure is to curet thoroughly with a small-size Meyhoefer's corneal curet, then touch with tincture of iodine. If after twenty-four hours there is no marked improvement, cauterization, either with carbolic acid after the same manner as the application of iodine, or with the actual cautery, should be thoroughly done. For the latter, the suitable instrument is Gruening's cautery probe. These two instruments are very inexpensive and should be in the office of every country doctor. Atropine sulphate, one percent, should be instilled every four hours for the first day, then twice a day. Hot applications of boric acid, a teaspoonful to a pint of water as hot as can be borne, bathing the eye for ten minutes at a time, every hour, are very beneficial. A shade or smoked glass may be worn to shield the eye from light.

The cauterization may be repeated in two or three days, if necessary; often one application suffices.

CORNS

Corns are divided into hard and soft—the latter being those situated between the toes and differing from the hard variety merely by being softened by maceration. The treatment of each is the same: First, permanent removal of the shoe which causes the pressure and friction, and second, application of salicylic acid in some manner. To relieve the suffering from inflammation around a corn, or that from "soft corns," the foot should be bathed in very hot water for a half hour; then dried carefully and the surface touched with saturated solution of silver nitrate.

The inflamed area around the corn may be surrounded by a piece of gauze smeared with belladonna ointment, covered with oiled silk, left on over-night. The burning is to be repeated every fourth or fifth evening. For ordinary corns this may be ordered:

Salicylic acid.....	2.0 (grs. 30)
Extract of cannabis indica	0.5 (grs. 8)
Collodion	16.0 (oz. 1-2)

To be applied every night with a camelshair brush. It often irritates a little for two or three days, but that soon passes away and a cure is effected.

Soft Corns.—The following formula is useful:

Acidi salicylici	4.0 (dr. 1)
Menthol	4.0 (dr. 1)
Olei theobromatis	120.0 (ozs. 4)

Apply every night after soaking the feet in warm water.

CRADLE

In surgery the arculus or cradle is very useful in keeping bed-clothes from coming in contact with a painful part. It is easily made of wire or of hickory branches.



It is particularly useful for bruises or wounds of the extremities, but may be made large enough to keep the bed-clothes from the abdomen in appendicitis, etc.

CYSTITIS

Acute Cystitis.—Acute cystitis may arise from gonorrhea, from infection by dirty sounds or catheters and from injury. For the reduction of the fever which is pres-

ent at the beginning, aconite is the best remedy, either as the tincture or as a granule of aconitine: one-half milligram (gr. 1-134) every hour or two until the temperature drops satisfactorily. For the pain half a tablet of hyoscine-morphine-cactin may be given every two or three hours by the mouth. Sodium benzoate in dosage of one centigram (gr. 1-6) every two or three hours gives good results, either alone or in combination with phenol salicylate two decigrams (3 grains). These should not be administered until after the temperature has come down to near the normal. While the aconitine is being given to check the fever large quantities of water should be drunk, with good doses of potassium citrate. During the height of the attack an exclusive liquid diet—preferably milk—is to be ordered. Occasionally the suffering is so great from the irritation at the neck of the bladder that good sleep is impossible. A suppository of belladonna and extract of opium in cacao butter, at bedtime, will give a good night's rest:

Extract of belladonna	0.1
Extract of opium	0.2
Cacao butter	q. s.

Mix and make four suppositories. Each morning after this is used an effervescent saline laxative (Abbott's) must be taken, followed by an enema after the bowels are moved. A few days' rest in bed is imperative.

Cystitis: Chronic.—A very distressing sequel to any operation in which the bladder has to be catheterized repeatedly is a chronic cystitis. The irritation may persist for months in spite of the most energetic treatment. Probably the most satisfactory remedy is lithia; it may be given as an effervescent tablet in a glassful of water three times a day for long periods, or lithium benzoate may be used in doses of one or two decigrams (one grain to three grains) every four hours during the day until the stomach

rebels. If there is much annoyance from having to urinate at night two grams of potassium bromide with a teaspoonful of tincture of hyoscyamus may be ordered at bedtime. To some patients arbutin (from uva ursi) in doses of one centigram (gr. 1-6) four to six times a day brings relief. Others are benefited by half-gram doses of phenol salicylate (salol) four times a day. Extreme cases demand irrigation of the bladder with a saturated solution of boric acid three times a week; after a few washings it is well to inject a dram of fluid extract of hydrastis in two ounces of water, at the end of an irrigation leaving it in the bladder. As a rule, the less local treatment the better. Two quarts of water drunk daily will do much toward cure.

For Gonorrheal Cystitis.—Of decided value in gonorrheal cystitis is arbutin in doses of five grains every three or four hours. In cystitis due to other pyogenic microorganisms it is soothing but not so effective.

Phenol Salicylate for Cystitis.—One of the most valuable of all drugs used for cystitis is salol (salicylate of phenol). This consists of about 65-percent salicylic acid and 35-percent phenol; is decomposed slowly in the intestine by the pancreatic fluid into its original constituents; and is eliminated through the urine as urate of salicyl, though if given in large quantities some seems to pass into the bladder unchanged. In five-grain doses every three hours it effectually prevents decomposition of urine in the bladder and keeps it from becoming alkaline. It cannot be continued very long on account of producing phenoluria. Whenever the urine becomes smoky, boric acid should be substituted for a few days.

CYSTIC DISEASE

Cystalgia.—Pain in the bladder may be neuralgic, but is usually due to stone, to infection or to stricture. (See "Irritable Bladder.")

Cystatrophía.—A true atrophy of the bladder is rare, and can have no remedy. Contracted bladder may sometimes be helped by gradual dilation, the best means being daily irrigation, each day adding not to exceed one dram of fluid to the amount injected through a fountain syringe. A saturated solution of boric acid is best.

Cystobubonocèle.—This is the name applied to a hernia of the bladder through the inguinal ring. It is chiefly of interest in that it sometimes is opened by mistake for the hernial sac—hence should always be borne in mind in operations for incarcerated inguinal hernia of the direct type. It is cured as is any other hernia: by closure of the opening by sutures.

CYSTS

Cystadenoma.—An adenoma is sometimes found to contain cysts; when the name cystadenoma is given to the growth. Treatment is the same as adenoma (which see).

Cystocarcinoma.—A cancerous tumor sometimes undergoes a cystic degeneration in some part, when it is called cystocarcinoma. The treatment is the same as cancer (which see).

Dermoid Cysts are congenital tumors which contain bone, teeth, hair, etc., occurring chiefly in the ovary, though they may be found in the testicle, the abdominal wall, etc., a favorite site being the region of the coccyx. Early excision is advisable.

Echinococcus Cysts are those found in various tissues and organs of the body, originating from the larvæ of *tænia echinococcus*, the tapeworm of the dog, which are taken into the stomach. They are frequent among Icelanders and Esquimaux, those who are thrown into close company with dogs; and in the temperate zone are occasionally met in those who eat scraps from garbage-cans,

etc. The liver is perhaps most often the site of this form of trouble, Glisson's capsule being pushed off and the parent-cyst developing daughter-cysts until almost the entire abdomen is filled. The only treatment is incision, thorough emptying of the cyst, cauterization with iodine and phenol (of each equal parts) and packing; allowing the cavity to agglutinate and the wound to close by granulation without suppuration.

Müllerian Cysts are tumors developing in the remnants or rudiments of the inferior (or vaginal) portion of the duct of Müller, and containing mucus or blood or even pus.

Retention Cysts are those which originate in the non-expulsion of the secretion of a gland, by reason of the closure of the duct—as sebaceous cysts, mucous cysts, ranula, etc. Removal; or incision and cauterization.

Wolffian Cysts are those which develop in the inferior vestiges of the canal of Wolff. They are found in the anterior or anterolateral wall of the vagina, and are sometimes prolonged toward the cervix and even into the lower part of the broad ligament. Extirpate.

DACTYLITIS

Inflammation of a finger or toe may be (1) traumatic, (2) rheumatic or (3) syphilitic. The first is to be treated by antiseptic applications; the second by antirheumatic remedies; the third by iodides and mercury. If pus forms it must be evacuated very early to prevent burrowing along the tendons with consequent great deformity. It is easy to open and easy to cure.

DACTYLOLYSIS

The falling off of a finger or toe, due to gangrene, leprosy, Reynaud's disease, etc., is a very rare surgical accident. Treatment consists merely in the application

of antiseptic dressings to the stump and attention to the disease which is the cause of the spontaneous amputation.

DEPILATORY

Most of the liquid depilatories on the market are solutions of barium sulphide. To remove the hair from the downy surface of a woman's skin iodine-collodion has been used, the collodion being painted on the part and removed when dry, bringing the adhering hairs with it. The following formula has been proposed:

Tincture of iodine (1 in 12)	3 parts
Oil of turpentine	6 parts
Castor oil	8 parts
Alcohol (90-percent)	19 parts
Collodion	100 parts

This is painted on the part and as the film comes off the hairs are supposed to come with the film. There is, however, nothing so satisfactory as a paste formed by adding water to a specially prepared barium powder. For such the following is a good formula:

Barium sulphide	25 parts
Powdered soap	5 parts
Powdered talc	35 parts
Corn starch.....	35 parts
Perfume	q. s.

One teaspoonful of the powder is made into a paste with three teaspoonfuls of water and applied to the parts with an ordinary shaving brush in a moderately thick and even layer. After four to five minutes the parts should be moistened with a sponge, when, after another five minutes, the hair can be removed by washing off the mass. It is important to use barium sulphide in as fresh a condition as possible; that oxidized by exposure to air should not be employed.

DUSTING POWDER: RESORCIN AS

Rarely from an infected wound there is too free discharge and an antiseptic dusting powder is desired. A most admirable one is:

Resorcin..... 1 part

Boric acid20 parts

Mix thoroughly. This may be dusted freely on the affected surface. It is much more pleasant than iodoform, yet possesses all the antiseptic value of that malodorous powder.

DYSPEPSIA: SURGICAL CURE OF

Some marvelous cures are being reported of apparently incurable chronic "indigestion" by removal of gallstones previously unsuspected by the victim. Cases dependent upon gastric or duodenal ulcers are also relievable by a not dangerous operation.

DYSPHAGIA: BROMIDES FOR

Occasionally a child is brought to the surgeon for presumed stricture of the esophagus—"congenital spasmodic stricture" it may have been pronounced. Investigation reveals the queer fact that since birth the little patient has been able to swallow solid food but that every attempt to drink any fluid is followed by choking: violent expulsive efforts, coughing, even strangling. The most careful examination reveals nothing in the way of organic cause—it is purely nervous. A few days' treatment with elixir of bromide of potassium will almost invariably relieve the trouble. It may be necessary to repeat the medicine every three or four weeks for some months before a complete cure is effected.

ECZEMA

The tendency of eczema to produce ulcers in certain regions of the body places this disease within the category

of surgical affections. Hundreds of prescriptions have been suggested for this sometimes intractable condition. *Merck's Archives* gives the following, which are among the best. In acute eczema, blue mass or compound cathartic pill, followed next morning by an effervescent saline laxative will be found advisable. Natural mineral waters are useful. When both iron and magnesium sulphate are indicated the following may be used:

Magnesii sulph.....	64.0 (ozs. 2)
Acidi sulphur. dil.....	16.0 (drs. 2)
Ferri sulph.....	0.6 (grs. 10)
Sodii chlor	4.0 (dr. 1)
Tinct. cardamom. comp ...	4.0 (dr. 1)
Aquæ dest.	256.0 (ozs. 8)

Filtra. Sig: One tablespoonful before breakfast in a tumblerful of cool or hot water.

In case of renal derangement diuretics are indicated, and in gouty cases, colchicum and Vichy water.

When both diuretics and alkalies are indicated, the following may be used:

Magnesii sulph.....	16.0 (oz. 1-2)
Magnesii carb.....	4.0 (dr. 1)
Tinct. colchici	2.0 (dr. 1-2)
Ol. menth. pip.....	0.1 (min. 2)
Aquæ dest.....	192.0 (ozs. 6)

The following is a useful lotion:

Phenol.....	3.0 (grs. 45)
Zinci oxidi	4.0 (dr. 1)
Glycerini	8.0 (drs. 2)
Aquæ calcis.....	q. s. ad. 252.0 (ozs. 8)

In this formula, when carbolic acid (phenol) does not act favorably, dilute hydrocyanic acid may be substituted. Tragacanth mucilage may be used instead of glycerin, or

both may be omitted and half the amount of lime water may be replaced by an equal quantity of elder-flower water:

Acidi hydrocyanici dil.....	4.0 (dr. 1)
Zinci oxidi.....	4.0 (dr. 1)
Calaminæ.....	4.0 (dr. 1)
Aquæ calcis.....	128.0 (ozs. 4)
Aquæ sambuci.....	128.0 (ozs. 4)

Use as a lotion three or four times a day.

It must be borne in mind that a disturbed nervous system, associated with a chronic intestinal indigestion, will always be found back of the eczematous manifestations; so arsenic and strychnine are frequently indicated, but particularly must attention be directed to proper food selection.

Influence of Diet in the Treatment of Eczema.—

Ravogli says that next to the kidneys the skin must be considered as an organ of elimination; indeed it has more eliminating power for some products than the kidneys themselves. The occurrence of eruptions after the ingestion of certain foods is not accidental. The skin is active in eliminating substances which are detrimental to the general economy. Individuals subject to eczema should subsist upon good, wholesome home cooking. The food should be fresh and of unquestionable nature. When products of fermentation develop in the stomach or in the intestines it must be admitted that there is a diseased condition of the functional activity of these organs. There is usually a catarrhal condition of the mucosa of the stomach or a nervous condition which brings about "dyspepsia." The same may be present in the intestines. The diet in such cases must protect the parts as much as possible and eliminate non-irritating qualities. Food which leaves the smallest possible residue should be eaten. As a rule therefore a coarse diet is better than a light diet. One should advise the use of graham and rye bread together with

honey, fruit juices, stewed plums, leguminous plants, boiled and baked potatoes; plenty of fresh milk, cream, and butter are also advised. Meats, beef, veal, fresh pork, boiled ham, chicken, with plenty of vegetables are to be given without fear, as well as fresh white-fish, trout and so forth. Dark meats, venison, corned beef, mackerel, lobster, eel, and strong cheese are forbidden. Candies and sugar must not be taken. Fresh country air and natural mineral-spring waters are very helpful in the treatment of these cases. The influence of diet on the treatment of eczema in gouty people is almost incredible.

Surgeon's Eczema.—By reason of much hand scrubbing, long continuance of the hands in fluids and exposure to cold air before perfect drying, the hands of busy operators are apt to become sore from a kind of dry eczema, especially in very cold weather. Applications of vaseline camphor-ice each night will prevent this; so also the use of the following:

Phenol	5.00
Oil of cade.....	10.00
Lanolin	500.00
Oil of rose.....	q. s.

This is to be well rubbed in each night, with especial attention to palmar surfaces.

EMPYEMA

The treatment of pyothorax may be summed up in two words: proper drainage. What constitutes proper drainage is the only source of controversy, but the following may be said to be definitely settled: (1) Empyema of childhood may be successfully treated by mere incision under perfect antiseptic precautions in a large percentage of cases; persistent discharge (more than six weeks) may necessitate excision of a small piece of rib. (2) In some instances of the disease in adult life the

Estländer operation is sufficient; removal of three or four inches of one or two ribs. (3) If the discharge continues more than two months after an Estländer operation, the more extensive Schede operation must be resorted to: excision of the entire chest-wall, including the parietal pleura, over as much of the thorax as the abscess-cavity underlies; that is, all of the external surface of the abscess-cavity must be cut away, leaving nothing but the pyogenic visceral surface, which must be cleaned by rubbing with gauze, the skin being then allowed to fall in upon the more or less collapsed lung. If this extensive area be kept clean by simply wiping it carefully every second or third day, healthy granulations will spring up; and as the cavity is obliterated, the lung will expand until by the time the wound closes, very little depression will remain in most cases. The cavity should not be irrigated with water, hydrogen dioxide or any other liquid, as a rule; all that is needful is cleaning away the excess of pus without disturbance of the granulations and loosely packing with plain gauze covered by an abundance of absorbent cotton. By this simple treatment convalescence is much more rapid and the resultant deformity less marked than when the surgeon does too much in the way of irrigating, washing, sponging and using antiseptic agents.

Internally the patient should be given the best of food, codliver oil or cream in large quantities, tonics and stimulants; for the primary lesion usually is of tuberculous character and unless free drainage is secured and the general health supported, pulmonary tuberculosis will follow; but if the proper treatment is carried out, recovery may be secured in a majority of cases.

ENEMA: NUTRIENT

After abdominal section (and some other serious operations as well) rectal feeding becomes a necessity.

An excellent nutrient enema is made by dissolving a tablespoonful of sugar in a teacupful of hot water and boiling in it, for a few minutes, a teaspoonful of starch; add a wineglassful of wine; beat up two eggs in a tablespoonful of milk and mix with the other and inject. It may be repeated every four to six hours until the patient is able to take nourishment by the mouth.

ENURESIS NOCTURNA

That "wetting the bed" by a child should be a symptom of nasopharyngeal adenoids seems at first glance to be ridiculous; but we cannot but be convinced of the accuracy of the observation when one notes the results in twenty-three children suffering from enuresis nocturna who were found to have adenoid growths and removal was practised. Of the twenty-three operated upon, there were twelve in which the enuresis (of several years' duration) practically ceased immediately, or within a short time after operation, and did not return during the time it was possible to keep the children under observation. In five more, recurrence was noted only after long intervals, or only after a cold causing temporary nasal obstruction; in two improvement was moderate; in one there was no return (period of observation after operation only nine days); while in only three removal of the adenoids had no apparent effect upon the enuresis.

Three explanations are allowable as to the effect of operation in overcoming the enuresis: One is the impress upon the nervous system by the shock of operation; the second (and a far more plausible one) finds in the reestablishment of nasal respiration a removal of the exciting cause of enuresis; while the third (my own) is that the adenoids excite the sexual centers of the nasal mucous membrane and cause the bladder to act unwisely. (See note on "Nasal Dysmenorrhea.") This latter relation is in

accordance with the theory of Major, which presumes the cause of the enuresis to be the overloading of the blood with carbonic-acid gas. Gronbeck does not regard all cases of enuresis as due to adenoids; but says that impeded nasal respiration should always be regarded as a possible factor and that in children the most frequent cause of such trouble is nasopharyngeal lymphoid growths.

EPIDIDYMITIS

According to Mackinney best results are obtainable in gonorrheal epididymitis by the application of a saturated solution of magnesium sulphate, in conjunction with elevation of the scrotum. After the acute symptoms are relieved an ointment composed of equal parts of the ointments of belladonna and mercury, together with the same quantity of ichthyol ointment, 10-percent, and lanolin, should be employed to hasten the absorption of the exudate.

As a local application for epididymitis there is nothing superior to

Aqueous extract of opium.....	8.0 (drs. 2)
Guaiacol.....	8.0 (drs. 2)
Lanolin	32.0 (oz. 1)

Half vaseline may be used after the first boxful; it does not permit such rapid absorption. The salve is equally soothing and remedial in orchitis.

EPILEPSY: TRAUMATIC

Far more cases of epilepsy depend upon trauma than is generally supposed. Those in which depressed fracture or other local irritation can be determined are fit subjects for operative treatment; but the friends of the patient should be thoroughly impressed with the idea that the patient must be kept under internal treatment for at least a year after operation. In truth

more epilepsy is absolutely curable than taught in our books. But in assuming treatment of any case there should always be a written agreement that the patient shall be under control at least two years, during which time one should treat every function of the individual so as to keep his general health in the best possible condition. Of course, institutional treatment is better in most cases than private treatment. Bromides and eliminatives are the basis of therapy; but solanine in doses of 1-67 grain four times a day, pushed up gradually to 1-12 grain, is earnestly advocated. Above all, the food must be of the most simple, easily digestible kind, and never eaten in excess; and the colon must be kept as nearly empty as possible.

EPISTAXIS

When nosebleed is persistent the nares may be plugged by tamponing with a long, narrow strip of iodoform gauze through each nostril; or a string may be passed through from front to back, brought out of the mouth and attached to a roll of gauze large enough to plug the posterior nares when it is pulled up behind the soft palate, and against this, held firmly by the string, the gauze tampon may be packed tightly upon the side from which the hemorrhage occurs. Aconitine, one milligram (1-67 grain), and veratrine, half a milligram (1-134 grain), may be given every half hour until the pulse becomes soft. Lemon juice or even vinegar may be injected into the nostril in less serious cases. Injection of adrenalin sometimes arrests it instantly; and a 20-percent solution of antipyrin also acts energetically as a styptic. Ice to the back of the neck is a "home remedy" often very effective.

ERYSIPELAS

Convalescence from Erysipelas.—During convalescence energetic use of tonics is indicated. Iron and

bitters are each commendable. The following combination is good:

Tincture of chloride of iron.. 16.0 (drs. 4)

Simple syrup..... 50.0 (drs. 12)

Whisky192.0 (ozs. 6)

Mix. Direct. One tablespoonful one hour after each meal.

Arsenic, two milligrams, and strychnine the same, may well be given at meal time in a capsule with quinine.

Facial Erysipelas.—Early in an attack of erysipelas of the face it is a good plan to cover the affected area with equal parts of ichthyol and extract of belladonna, a piece of rubber tissue or oiled silk being placed over it to keep out the air. A half centigram (gr. 1-12) of pilocarpine may be given hypodermically, and repeated by mouth every two hours until profuse perspiration is induced; then one every four to six hours to keep the skin constantly moist. The bowels must be kept active, preferably by saline laxatives. If the temperature runs high a few doses of acetanilid (half gram, repeated in two hours—twice in twenty-four hours) may be given early in the trouble, but must be watched carefully later. Stimulants and food are indicated always. Sulphate of strychnine (one-fourth centigram—1-20 grain) may be given every six hours when the patient is weak.

Local Applications in Erysipelas.—The erysipelatous area may be painted with pure phenol, or with a solution of 160 grains of silver nitrate to the ounce of water, though this sometimes causes a slough, and then covered thickly with a paste made of equal parts of ichthyol and lanolin; rubber tissue should be placed over this and then a pad of absorbent cotton held in place by a bandage. This dressing must be changed twice a day. If there be great pain belladonna ointment may be substituted for the lanolin.

Treatment of Facial Erysipelas.—For more than a quarter of a century Prof. W. F. Waugh has not had a case of facial erysipelas which did not promptly yield to treatment, consisting of pilocarpine in sthenic cases and iron in asthenic ones; with practically no attention to local measures save exclusion of the air. In sthenic cases the pilocarpine is given every hour until sweating occurs. When this takes place the edges of the involved area begin to recede. This remedy is then suspended for a day, and if the eruption continues the treatment is resumed until it is evident that the remedy has perfect control of the disease. In asthenic cases the tincture of the chloride of iron, thirty drops, is given every four hours, and nourishment is crowded, when improvement sets in at once.

ESOPHAGUS: FOREIGN BODY IN

Candler suggests that apomorphine, half a centigram (gr. 1-12) injected hypodermically, will quite often cause the expulsion of the offending substance. Give enough apomorphine and the stomach will empty itself within five minutes. As the drug relaxes muscular tissues generally, it serves in this instance a double purpose.

FECAL DISORDERS

Fecal Fistulæ.—In spite of every precaution during operation a fecal fistula will form now and then, especially in dealing with periappendical abscess. Fortunately far more than a majority of the cases heal spontaneously in a very few days to a year, a year being the practical limit in which nature may be expected to cure the condition. Those sinuses running through the vaginal canal are usually a better prognosis than the abdominal wall. When secondary section is made to close the opening in the gut a large proportion of the cases die from exhaustion or complicated conditions; the operation itself cures about 50 percent. Therefore it is best to exhaust medi-

cal and local treatment before any operation is tried. The diet should be non-fermenting and easily digestible, the patient kept in bed for a long time and the parts kept surgically clean as far as possible, and every effort made to close the wound at the intestinal opening. After the sinus is gotten as clean as it may be from packing and cleansing, the bowel should be thoroughly cleared out and then peristalsis checked by the free use of morphine, allowing if possible a rest of one week with concentrated food. The moving of the bowels is then done by enemas. The surgical treatment consists in removal of the sinus and a wedge-shaped piece of gut.

For Fecal Impaction.—In cases of fecal impaction try rectal injection of a pint of kerosene. It often “works” admirably.

FEET: DISORDERS OF

Flat-Foot.—These cases are separable into three classes: (1) The flabby, easily moved foot which, on weight-bearing, becomes pronouncedly flat, due to a laxity of the muscles and ligaments. The condition is associated with vasomotor disturbances and varicose veins, and is due possibly to altered circulatory conditions. If a pad is used to correct the condition, tonics and massage are also indicated. Instead of the pad it is better to raise the inner side of the sole and heel and by thus causing inversion and adduction, bring about a physiological raising of the arch. (2) The spasmodic form, resulting from a persistence of the above, or due to injury such as a sprain or Pott's fracture, rheumatic fever or gonorrhea. The spasm must be overcome by rest or manipulation, putting the foot in an overcorrected position in plaster. If need be, tenotomize the extensor communis digitorum and peronei muscles. (3) Rigid flat feet with great alterations in the relations of the bones

and seeming ankylosis. Here operation is called for: Exsection of the astragalo-scaphoid joint.

Sweating Feet.—The following formula is an excellent one for sweating of the feet:

Potassium permanganate.....	13 parts
Alum	1 part
Talc	50 parts
Zinc oxide.....	18 parts
Calcium hydrate.....	18 parts

Another formula highly recommended is:

Salicylic acid.....	2 parts
Zinc stearate.....	1 part
Talc	40 parts
Compound tincture of vanilla.....	q. s.

The last-named ingredient is simply to cover the odor.

Swollen Feet.—Swelling of the feet may be found in (1) dropsy, especially from a weak heart, (2) those who take but little exercise but are rheumatic or gouty, particularly found in elderly people, and (3) those who are compelled to stand or walk too much, notably if bad shoes are worn. In every one of these, however, small doses of arsenic (a milligram or two three times a day) will do good; and in the first and last varieties strychnine may be added in the same dose but must not be continued longer than three weeks. In every case careful examination of the respiratory, circulatory and renal system must be made before deciding the condition to be trivial

Tender Feet.—From too tight shoes, from standing too long, from abrasions of the skin, from too thin soles, etc., the feet often become tender and quite painful. Bathing in very hot water every night is comforting. If the

skin continues tender, the feet should be rubbed morning and evening in

Salicylic acid.....	5.0 (drs. 1 1-2)
Borax	10.0 (drs. 3)
Glycerin	128.0 (ozs. 4)
Water	128.0 (ozs. 4)

Sometimes the arch of the foot is weak and in need of a light steel spring in the bottom of the shoe. The use of rubber heels relieves many cases of footache.

FELON: TO ABORT

Over a forming whitlow apply absorbent cotton saturated with alcohol, and cover with a piece of rubber tissue (or even a large finger-cot) in such a way as to exclude the air. In from sixty to seventy-two hours relief will be complete, and a cure effected in a majority of cases—practically all if seen early.

FEVERS: SURGICAL

Aconitine is a valuable drug in controlling the fever which naturally follows infection of a wound—such as a crushed foot or an abscess or boil. It may be given in doses of one-half milligram (gr. 1-134) every half hour until the temperature falls. If dispensed in granule form the patient must be instructed to swallow it quickly, throwing it well back into the throat, or disagreeable and persistent numbness of the tongue will be produced; or it may be given dissolved in at least an ounce of water. A small capsule may be used if preferred. This dosage is for the “amorphous” aconitine. It must be remembered that there is a “crystalline aconitine” upon the markets—several times as strong—the dose of which is 1-500 grain.

FINGERS: CONTRACTURES OF

Sometimes contracture of the fingers following the treatment of a cellulitis of the hand and forearm may

be due, not to the cellulitis itself nor to the incisions made to relieve it, but to fibrosis and shortening of the flexors in the forearm, the result of too tight bandaging or strapping. Such a condition—Volkmann's ischemic muscle contracture—must, therefore, be distinguished from the stiff, flexed fingers produced by cellulitis. Passive motions and massage are helpful in both conditions, but in the former shortening of the radius and ulna is necessary to accommodate the contracted muscles.

FISTULA: TREATMENT AFTER OPERATION

At the completion of operation for fistula of the anus a hard-rubber tube is introduced well above the cut sphincter and gauze tamponed around it firmly. This permits the escape of gas while the barrier of beginning granulation starts upon the raw surface. That granulation may become fairly well established before irritation by the passing feces is permitted it is best to keep the bowels from moving for six days if possible, a liquid diet being advised. If the packing is saturated with the wound-discharge before this time it may be removed and fresh gauze inserted; but as this is very painful it is better to leave the original packing several days even if it does become very foul of odor. When the gauze is removed a high enema of olive oil, or an ox-gall enema may be given. Later a saline laxative is to be ordered. After the bowels have moved the wound should be cleaned by gentle washing, the two raw surfaces being carefully separated, iodoform dusted in freely and a strip of iodoform gauze carried well into the rectum and packed loosely into the cut; with a pad of absorbent cotton over all, supported by a T-bandage. If possible the dressing should be made twice daily for some days; later once daily; and as the discharge lessens, every second day, though the patient is instructed to clean it as well as possible after each bowel-movement. Should granulation be too slow,

dressing with balsam of Peru daily will soon stimulate the surfaces sufficiently to insure early healing. The patient should, when circumstances permit, lie in bed two weeks; but most will insist upon being at work in ten days—which does not greatly retard healing if operation has been done properly. Most careful attention must be paid to building up the general health of the patient during convalescence. Temporary loss of sphincteric control need not occasion anxiety.

FRACTURES

Colles's Fracture.—The inflexible rule in Colles's fracture should be to refuse treatment unless the patient will permit reduction in complete surgical narcosis. If dressings are applied without anesthesia great deformity is almost sure to follow. But if all muscles be relaxed it is easy to exert sufficient force to overcome the deformity at once, when if pains be taken to maintain the normal position of the ulna by a sufficiently hard and properly applied pad, placed on the palmar side of the end of the ulna, an excellent result can be predicted. If, in addition, early massage and movements of the fingers, both active and passive, be employed, the very best results can be obtained in the great majority of cases. When the desired method cannot be adopted the wrist may be put as nearly straight as possible and several straps of adhesive plaster wrapped around wrist and forearm.

Fracture of the Acromion.—Raise shoulder by supporting elbow in sling; place pad in axilla; bind arm to side by broad bandage around body. Ligamentous union may be expected. Liberate in three weeks.

Fracture of the Fingers.—Pull the broken finger until it is straight and apply a small splint extending well up into the palm of the hand and bandage rather

tightly. Tighten the bandage in a day or two when swelling subsides and leave splint on for ten days. When the fracture occurs into a joint, passive motion must be instituted as soon as the splint can be removed.

Fracture of the Forearm.—When both bones of the forearm are broken the fragments should be replaced under chloroform. A thin, hard splint, extending well down into the palm (and also well above the elbow if the break is within two inches of that joint), should be placed on the front and a smaller one on the back, held by a two-inch bandage snugly applied. The splints should be well padded. Bandages must be tightened on the third or fourth day, great care being taken that the fragments are not displaced. In children plaster of paris may be applied after the swelling is gone. The splint must be worn three weeks. Advocation of early passive motion is to be condemned.

Fractures of the Head of Radius.—The x-ray has shown that fractures of the head of the radius are common instead of rare as taught heretofore. It shows that in the uncomplicated variety (probably the most frequent), a vertical line of fracture separates the anterior third or half of the head. Thomas says: In a fall on the hand with the elbow extended, only this portion of the head is in contact with the capitellum of the humerus, so that the downward impact breaks it off; the resistance of the intact coronoïd process prevents separation of the fragments and consequent rupture of the orbicular ligament; the lines of fracture on the upper surface of the head tend to radiate from the periphery towards the center, so that when less than a half of the head is detached the small fragment is angular in shape; it fits closely into a corresponding depression in the remaining portion of the head, and is held there by the untorn orbicular ligament. As a result, the head will move as a whole within the ligament, movement of

one fragment on the other being impossible. Sometimes the line of fracture is straight, especially when the detachment includes half of the head, and in these cases crepitus will be possible. Absence of crepitus in the presence of positive fracture is peculiar, but the localized and severe pain and tenderness, and the limitation of motion in the elbow, are sufficiently characteristic to establish the diagnosis in most cases, much more so than in the average case of fractured rib. The fact that this fracture is always intracapsular makes it important from the standpoint of prognosis, although the close splinting of the fragments by the untorn orbicular ligament favors a good result in most cases. It is probable that most of the obscure "sprains" of the elbow, followed by more or less ankylosis, are in reality fractures of the head of the radius. Fixation of joint for three weeks is all the treatment usually needed. It will rarely be necessary to excise the head of the radius, as is done by Stimson in most of his cases, or to excise the detached fragment, as is done by Cheyne.

Fracture of the Humerus.—Reduce fracture as well as possible and put in wooden splints until swelling is gone. On the fourth to the sixth day chloroform the patient, remove the splint, put the fractured ends in exact apposition and apply a plaster-of-paris splint over a layer of cotton batting, including shoulder and elbow bent at nearly right angle. Have the forearm carried in a sling. Remove the plaster in four weeks and use passive motion.

If the break is into the elbow, passive motion should be begun at the third week, the wooden splint being reapplied after each treatment. A good joint can usually be secured in children, if motion be made daily after the end of the third week.

Fracture of the Leg.—Chloroform the patient and correct the deformity. Put in splints from the sole of the foot to above the knee—one on each side of the leg, well

padded—and bandage so as to immobilize the ankle and knee. In four days remove the splints, with the help of another doctor who will prevent displacement of the fragments; wrap the leg in cotton-batting and apply four 3-inch plaster-of-paris bandages, including the ankle and knee. Let the patient out on crutches at the end of one week; no weight is to be borne on foot. Remove the plaster at the end of three weeks—four weeks in the case of debilitated patients—and permit the patient to walk with a cane.

Fracture of the Olecranon.—In fracture of the olecranon Murphy advises subcutaneous wiring. It may be done without opening the joint and without any danger of infection if one is very careful as to aseptic details.

Fracture of the Patella.—Incision over the fracture, withdrawal of the soft tissues from between the fragments and suturing with twenty-day chromic gut, constitute the essential features of the most approved treatment of fracture of the patella.

The mortality of cases *properly* operated upon is no higher than that of those not cut. In a case not operated upon, the patient generally does not get full use of the limb, cannot kneel well and has difficulty in going up-stairs or up-hill. Only those cases in which there is no separation of the fragments give ideal results from non-operative treatment. In cases treated by aseptic suture there is generally complete return of function, and these only require half as long as the average for union to occur. All cases in which the fragments are widely separated should be operated on at once. Where the fragments can be brought into perfect apposition easily the circular subcutaneous suture around the patella is perhaps satisfactory, but generally the bone should be exposed and united by silver wire or No. 4 chromic gut passed through holes bored from the anterior surface near the break and

coming out on the back part of the fractured surface, so that the joint proper is not entered. The ligaments are sewed with plain catgut. To get perfect function it is necessary to begin use of the joint early and to force exercise in spite of pain and stiffness. Massage and passive motion must be begun eight or ten days after operation, and walking in three weeks.

Fracture of the Thigh.—Dress the fracture by putting the thigh between sand-bags or in a splint box lined with pillows until the worst of the swelling has disappeared. On the fourth or fifth day anesthetize the patient, reduce the fracture and apply a long splint from below the foot to near the axilla, and a shorter one from the perineum to beyond the foot—both being well padded. Bandage tightly, including the foot and lower part of the abdomen and hip. Apply a weight of from ten to sixteen pounds, suspended from the foot over a pulley at the end of the bed, using weight enough to counteract the tendency to shortening. Keep the patient quiet for six weeks. From one to two inches shortening may be expected, but if the patient be kept quiet and the weight be well borne there may be practically none.

Fracture of the Ulna.—This is produced by a direct blow, or by falling with the arm across a sharp edge of board, stone, etc. Often more attention to the injured soft parts is required than to the fracture itself. A firm piece of pasteboard suffices for a splint. Fixation for two weeks is required. Fractures of the coronoid process of the ulna are not very common. They are recognizable and are not especially hard to manage. Fixation of the elbow-joint at or beyond a right angle by means of a plaster-of-paris bandage over a lightly padded gauze or flannel bandage gives a good result after three weeks' immobilization. But when left unreduced for weeks, resection of joint has to be performed.

Operative Treatment of Fractures.—Some cases of even simple fracture are better treated by operation. Kelley, of Philadelphia, thinks the advantages are: (1) Relief of pain from movement of fractured ends and from tension due to extravasated blood. (2) The possibility of accurately approximating and retaining in position the fractured portions of bones. (3) Prevention of shortening and deformity. (4) The possibility of removing clots and repairing neighboring structures. (5) Excessive callus formation is prevented, and in fractures involving joints, subsequent limitation of motion and deformity is also prevented. (6) Pressure on adjoining structures is removed. (7) Associated dislocations may be properly reduced. (8) The period of disability is considerably lessened. (9) The skeletal mechanics of the patient are left as before the fracture. These advantages, he thinks, vastly outweigh the possible dangers of infection or necrosis of the fractured ends, and of an external scar. When conservative methods fail to insure perfect approximation and retention and when the preservation of the skeletal mechanism is important, especially in laborers, there should be no hesitancy in converting a closed fracture into an open one. Absorbable sutures are to be preferred for uniting the bones, and as all methods require some sort of external retentive apparatus, it would seem that the ideal form of internal fixation is by the heavy (No. 3) chromicized catgut. The operative treatment of open fractures and of separated epiphyses and fractures associated with locations thus comes under the department of operative surgery.

Subperiosteal Fracture.—Severe localized pain after traumatism, especially in children, may be due to subperiosteal fracture, notably in injuries to the head of the humerus or the femur. Extreme localized tenderness is the characteristic symptom. An abnormal mobility and

marked deformity are absent, and crepitus may not be elicited. The break is usually almost transverse. It is to be treated by suturing with chromic catgut through drill-holes, in case the existence of the fracture is recognized only late. Of course if it is known early that the fracture is present, perfect immobilization will give satisfactory results.

GALLIC ACID OINTMENT

Practitioners of the last century were very fond of gallic acid on account of its astringent properties. Now it is rarely used except in the form of the unguentum acidi gallici of the United States Pharmacopeia. This is prescribed for psoriasis and as an application to old sores and ulcers which are discharging too freely.

GALLSTONES

Thousands of patients suffer from gallstones and don't know it; almost as many thousands of doctors continue pouring pepsin and hydrochloric acid into stomachs supposed to be the source of "indigestion" or "dyspepsia" instead of examining carefully and ascertaining the true cause of suffering. A test breakfast and analysis of the stomach-contents can be made by any recent graduate (and many an older one as well)—but it is often regarded as "too much trouble." Nothing is too much trouble which will relieve a long-suffering "chronic." If more time were spent in careful examination of obscure cases and less in efforts to get more patients from competitors the world would be better off. The ambition of too many a practiser of medicine is to reach that frightful stage at which he can exclaim: "I am too busy to read medical books and journals." God pity the patient of such! In a very large proportion of cases unsuspected gallstones and cholecystitis will be found to be the cause of the indigestion and pain; removal will effect a cure.

Avoiding Secondary Operations for Gallstones.—

It is a well-known fact that quite a large number of patients operated on for gallstones have to submit to a second operation—for stones accidentally left behind, or for those which form after the cholecystostomy. Concerning the latter Richardson has shown that after operations for gallstones, in about 15 percent of all cases there is a new gallstone formation necessitating a second operation. This usually can be avoided by increasing the amount of bile-salts by their administration by the mouth. Operation for gallstones is unfortunately imperative where there is occlusion of the duct, but after operation, in order to prevent a reformation of stone, care should be taken to increase the amount of bile-salts to hold the cholesterin and bilirubin in solution. It is claimed that not only here but also in hepatic colic, if sodium glycocholate is steadily and regularly administered, no more stones will be formed and those remaining in the gall-bladder will be gradually dissolved. The "bilein" of Abbott should be very useful in this connection, combining as it does all the important bile salts. During the process of solution they become soft and friable so that they can easily be crushed between the fingers. In chlorosis and anemia and in those diseases in which there is destruction of hemoglobin, the elimination of the excessive bilirubin formed is accelerated by an increased flow of bile, and as the anemias are largely the result of malnutrition, stimulation of the liver is of great therapeutic value.

Fever with Gallstones.—Gallstone colic, however severe, gives rise to practically no fever unless infection of the gall-bladder has occurred by the colon bacillus or one of the common pus-producing cocci; in case high fever accompanies the attack, operation is imperative. Long says: Fever accompanying gallstones depends always upon infec-

tion of the gall-bladder or ducts and varies from normal to 105°F. The peculiarity of gallstone fever is the sharp rise of temperature which lasts only a few hours and drops suddenly back to normal. It is often spoken of as "a steeple temperature." It is not at all infrequent for a patient to have at irregular intervals a chill, accompanied by a terrific colic, and followed by a sudden rise of temperature to 105°F.; a dose of morphine will relieve the pain and in a few hours the temperature will be normal. It will be found at operation that there is a suppurating cholangitis with more or less stones in the gall-bladder and one in the common duct.

Gastric Pain vs. Biliary Colic.—That the gastric crises of an unrecognized locomotor ataxia may be mistaken for gallstone colic has not been made sufficiently clear; nor has sufficient emphasis been laid upon the proneness of "morphine fiends" to simulate gallstone colic in order to get a hypodermic injection while among strangers where the usual "dope" cannot be obtained. Patients who present themselves apparently in great pain and requesting immediate relief, should always be looked upon with suspicion. Thoroughness in examination and careful inquiry into personal and family history will unquestionably reveal many cases of malingering as well as clear up the diagnosis of apparently complicated cases. The possibility of apparent gallstone colic being gastric crisis of ataxia, should be borne in mind when strange patients request treatment. It must be remembered also that gastric crises of ataxia may simulate acute gastric lesions, appearing like gastric ulcer. One can only then arrive at a right conclusion in non-gastric diseases and troubles other than biliary ones with gastric symptoms, after a thorough examination of the patient's whole body and a most careful study of all the secretions and excretions.

Non-Surgical Cure of Gallstones.—The statement is often made that gallstones may be “cured” by copious draughts of olive oil, by free use of bilein, etc. The truth of the matter is that gallstones of themselves are of little importance—a large proportion of men and women past 50 years would be found to have gallstones if the gall-bladder were opened; it is only when an autoinfection of the mucous membrane occurs that trouble arises.

The infection may take the form of (1) an acute cholecystitis, without occlusion of the cystic duct, (2) acute inflammation of the gall-bladder with stoppage of the outflow—abscess of the gall-bladder, (3) milder infection, as from the bacillus coli communis, with or without cessation of drainage; all associated with a catarrhal condition of the intestines. These facts explain the apparent efficacy of many of the vaunted gallstone remedies. Most contain more or less drastic purgatives, and they give unmistakable relief, although they have the drawbacks of all purgatives in catarrh of the intestines; aggravating the condition after a time. The most promising field for internal treatment is chronic cholelithiasis without repeated chills and remittent fever, but it requires the greatest patience. A cure is seldom realized in less than four or five months, but it is possible to avoid an operation by careful dietetic and therapeutic management during all of this time. If the patient is under constant medical supervision, the development of serious complications need scarcely be feared.

The main point in internal treatment is repose, and this must be absolute until the last trace of the cholecystitis has completely retrogressed. This may occur sometimes in four or five weeks, in other cases not until eight or ten weeks or still longer. After all traces of swelling of the gall-bladder and of the slightest tenderness have vanished, the patient must be made to take plenty of outdoor exercise, abstain from too much fat, sugar and starch,

and keep the bowels thoroughly active by saline laxative. Finally, if repeated attacks of gallstone colic become troublesome, or if jaundice become prominent, operative treatment must be insisted upon. The succinate of sodium in doses of 5 grains four times daily has proven actually curative in a very large percentage of cases, according to the experience of Prof. W. F. Waugh, who has used this remedy very extensively. It certainly deserves a trial.

Pain of Gallstones.—Certain patients subject to gallstone colic are relieved by the use of gelsemium taken at the very onset of the attack. The method of administration is this: At the first intimation of an on-coming paroxysm five drops of the tincture of gelsemium are taken, followed in fifteen minutes by a second dose. Fifteen minutes later a teaspoonful of sodium bicarbonate is taken in a tumblerful of very hot water; and in another quarter hour a third dose of gelsemium is taken. If relief is to be afforded by this plan no more will be needed; in rare instances the first dose alone checks the spasmodic contraction which gives rise to the attack.

Sodium Oleate for Gallstones.—A preparation now widely used for jaundice is oleate of sodium. It is used principally for catarrhal jaundice but is also capable of improving jaundice due to obstruction by gallstones if it be given just after the attack of colic has subsided. It is said to reduce the frequency of attacks in those subject to frequent but not very severe spells.

GANGLION: CURE OF

Sometimes patients will not submit to operations for ganglion. What is the best non-operative treatment? Cates says that the best treatment is injection of campho-phenol. He has never failed to effect a cure by this agent. It is prepared by mixing equal parts of camphor "gum"

and crystalline carbolic acid. The result is a pure white, slightly oily fluid, with the odor of camphor. It is non-toxic, having all the good but none of the bad properties of carbolic acid. To use it, the region of the ganglion should be prepared as for an operation. The preparation of campho-phenol in quantity of 15 or 20 drops should be injected directly into the ganglion by means of a hypodermic syringe, the needle of which has just been boiled. There is some reactionary swelling, but this soon subsides, and Cates claims that a complete cure is always obtainable by one injection. The limb should be kept at rest on a splint, or the patient should remain in bed a few days.

GANGRENE

Amputation for Diabetic Gangrene.—Most surgical writers condemn any surgical measures in diabetic gangrene, following Treves who said: "Diabetic gangrene is not within the scope of surgery; an amputation in such cases is almost invariably fatal." But—death is certain without it; so, if the case be seen early, before much of the foot is affected, and the patient will consent, amputation at the middle of the thigh should be made. Under modern methods there is no more shock with this amputation than with one lower on the leg; hence the rule should be: Very high amputation, or none.

Carbolic Acid Gangrene.—Many cases of serious gangrene have followed the injudicious use of phenol, particularly when wet phenolized dressings have been covered with rubber tissue or oiled silk, most often, too, when the original injury or sepsis is trivial in degree. The appearance of the gangrenous part in such cases is characteristic. The skin at first is dry, wrinkled, and grayish white in color; later it becomes darker and more shriveled. At the junction of the living and dead tissue there is some

hyperemia; and eventually a line of demarcation forms. As it is difficult to tell how much is actually destroyed, it is proper to wait for the line of demarcation before amputation is performed. As a rule there is but little. In no one of the cases the author has seen has there been any swelling of the proximal part, but such swelling has been described in some cases. The condition is, as a rule, similar to a typical case of dry gangrene. Various explanations have been given as to the occurrence of gangrene under the conditions mentioned. It may follow the use of solutions as weak as one- or two-percent strength. It has been suggested that some individuals have an idiosyncrasy, and are locally much more susceptible to the hurtful action of the drug than are others, and that in them stasis, followed by thrombosis, occurs more readily, and gangrene results. It is a fact that the portion which becomes gangrenous is generally a terminal part of the body—for example, a finger or a toe.

Diabetic Gangrene.—Encouraging results are sometimes obtained in this usually incurable condition from the administration of nuclein. Locally, mild antiseptic applications are indicated. If amputation is to be advised it must be early and far above the site of local lesions; it may be made under a single dose of the hyoscine-morphine-cactin anesthetic, plus cocaine locally.

Internal Medication in Gangrene.—While it is true that very little can be done for gangrene (even diabetic) by internal medication, it is equally true that some kind of medicine must be given or patient and friends will be dissatisfied and some surgeon found who knows enough to *treat a patient as well as treat a disease!* Of drugs advised probably first choice should fall on nuclein—one of the “defensive proteids” of the living body—which has recently been much employed in general debility, the dose of which is from two to five drops of the solution or one to three

of the two-drop tablets in which it may be obtained. Four doses a day may be given. Alcohol may be of benefit in some cases, but as a rule one-twentieth grain of sulphate of strychnine four times a day will better hold up the patient's strength. The "triple arsenates"—arsenate of strychnine, arsenate of quinine and arsenate of iron, one milligram of each (gr. 1-67) four times a day—give much satisfaction in keeping the patient from sinking before "demarcation" occurs, if that is to be waited for.

GASTRIC ULCER

Before resorting to surgical treatment the Lenhartz method should be tried. It is as follows: (1) Absolute rest in bed for at least four weeks; (2) avoidance of all mental excitement; (3) almost constant use of ice-bags over the stomach for two weeks; (4) daily administration of from 200 to 300 Cc. of iced milk by spoonful and two to four beaten eggs; (5) the use for ten days of 2 Gm. (30 grains) of bismuth subnitrate at a dose. Importance is attached to the use of beaten eggs. They are beaten whole with a little sugar and kept in contact with ice.

Feeding.—The strength must be maintained by nutrient enemata, and by good claret, iced, swallowed in small quantities at frequent intervals. After the stomach has rested for a few days foods which are digested chiefly in the intestine may be guardedly tried. Excision of the ulcer is justifiable.

Gelatin for Gastric Hemorrhage.—Excellent results are reported in the treatment of gastric and intestinal hemorrhage by the internal administration of a preparation of fluid gelatin. Prompt effect of the remedy in such cases as typhoid fever, gastric carcinoma, ulcer of the stomach, and melena has been reported. In none of these cases was any other medicine resorted to except the gelatin treatment, yet prompt cessation of

the bleeding followed in nearly all. The formula for this gelatin mixture is as follows: 20 grams of gelatin is boiled during six hours with enough water to make 130 cubic centimeters. It then remains fluid, and 2 grams of citric acid is added. It may be flavored with a little syrup of orange, and is given in doses of one or two tablespoonfuls every two hours.

Removal of Gastric Ulcer.—It is far better, when possible, to remove the ulcers near the pylorus (even though there be three or four) than to make a gastro-jejunosomy. If they can be excised without danger of causing cicatricial stricture of the pylorus, the advantages of simple excision are that the site of the disease (and the source of hemorrhage) is removed, the normal relation of the viscera is not disturbed, convalescence is speedier and the ultimate results are better. Of course if there be great dilation of the stomach it will be better to make a gastroenterostomy at the lowest part of the stomach, but on account of the danger of formation of "vicious circle" it should be avoided whenever possible. Ulcers of the duodenum should be treated in the same way.

To Check Hemorrhage.—The patient must be kept perfectly quiet, a small dose of morphine being injected if necessary. Ergot is advised by some but must not be continued if it cause vomiting, as vomiting is a source of great danger. Small pieces of ice may be swallowed, whole.

To Check Pain.—When patients will not submit to operative treatment for gastric ulcer the pain may be controlled far better than by the use of morphine by simply having the patient take a teaspoonful of bicarbonate of sodium in lime water, with a few drops of essence of peppermint added.

To Stop Vomiting.—Bismuth subnitrate may be given by the stomach; but the best way is to give 2 grams

(30 grains) each of chloral and potassium bromide in four ounces of water, by the rectum.

GAUZE: THE CARE OF

While it costs more, it is best to buy plain, sterilized gauze, as well as bichloride gauze, in one-yard packages, for use in minor surgery and for dressing of wounds which must be kept aseptic. For use at operations five-yard rolls in pasteboard boxes (hermetically sealed after sterilization) are best; but if the operation be one of magnitude, such as abdominal section, pieces should be cut from the roll and boiled at the time of operation. If any part of a roll be left it should be carefully wrapped up in the clean container in which it came and saved for *dressing infected cases*.

The average doctor buys a jar containing five yards. of gauze, opens it, cuts off what he needs with scissors taken from an instrument-case or satchel, and says he has used an "aseptic" dressing. This is not true unless the shears be taken out of the sterilizer or boiler, for they have become contaminated in the satchel or case; even letting them lie in alcohol for a few minutes does not insure sterility. After the jar has once been opened and some of the gauze cut off, the remainder is not strictly sterile and should never be used as a dressing for a perfectly clean wound; hence the advice to buy in yard packages for strictly aseptic cases.

A large, clean jar should be kept in every surgeon's dressing-room into which the remains of these yard pieces may be thrown, because some wounds do not require a full yard or full two yards, and these small pieces may be employed for dressing infected wounds. It is really better to have one dry jar and one containing 1 in 2000 corrosive sublimate solution, or 1 in 40 phenol solution, so that one may have constantly at hand both dry and

moist gauze for infected wounds. When an operation is performed in a private house the packages should not be opened until the instruments are to be boiled; any left-over gauze may be wrung dry and carried to the office to add to the moist-jar; but if the case has been one of bad pus-infection the remaining gauze must be boiled twenty minutes before dropping into the moist jar even though the solution be strongly germicidal. Too much attention cannot be exercised in the care of gauze for dressings.

GENITOURINARY SUPPURATION

Infections of the genitourinary tract attended by the formation of pus are greatly lessened in virulence by small quantities of formaldehyde, a drug which is excreted chiefly by the kidneys. Pyelitis, pyelonephrosis, cystitis, prostatitis and even gonorrheal urethritis speedily improve after its administration. A most excellent combination for each of these diseases is:

Formin	0.2 (grs. 3)
Arbutin	0.04 (gr. 1-2)
Ammonium benzoate.....	0.2 (grs. 3)

One such tablet is to be taken in from four to eight ounces of water every three to six hours. From it formaldehyde is generated slowly, and gradually eliminated through the kidneys, thus exercising an antiseptic action from the very glomeruli of the kidney to the end of the tractus genitalis.

GLEET

Under the name "gleet" are included (a) the discharge (often only a "morning drop" obtained by stripping the urethra) of a chronic urethritis, and (b) the mucopurulent discharge accompanying recent strictures. Both were formerly regarded as of minor importance and were not considered a bar to marriage. Now it is known that such

discharges are a menace to the happiness, and often the life, of any woman previously free from infection with whom the patient may have intercourse; so long as there is a morning drop, so long as clap-shreds are to be seen in the morning urine, there is danger of infection and the victim should not be permitted to marry.

If there is a stricture it should be treated by proper measures. (See "Stricture.") But usually the gleet depends upon a chronic urethritis or at least an infection of some of the deep follicles of the urethra, or upon an ulcerated spot within an inch or two of the meatus externus. When passage of a sound shows no stricture and when the endoscope reveals no ulcer within the first two inches of the urethra it may be taken for granted that the discharge is due to a chronic inflammation, and an injection ordered as follows:

Zinc sulphate	I.0
Lead acetate	I.0
Alum	I.0
Water	160.0

Mix and use as an injection thrice daily. At first the discharge will increase, but in from 3 to 6 weeks the trouble will entirely disappear—in the favorable cases.

Ricord's formula is still a favorite with some genito-urinary surgeons: two parts of rose water to one part of claret wine, lessening the amount of water daily until full-strength wine can be tolerated as an injection.

When the discharge does not yield to these injections there is some point of granulation which must be found by repeated endoscopic examinations, and, when detected, cured by passing graduated steel sounds beyond the abraded surface, three or four times a week; or later, if necessary, by burning with a 25-percent solution of nitrate of silver, through an endoscope, by means of a little cotton on the end of a probe.

The urine should be kept non-irritating by use of arbutin or similar remedies.

GLOSSITIS

Inflammation of the tongue of very serious character sometimes follows slight injury, as from injudicious seizure with forceps by an excitable and not too wise anesthetizer; and it may arise from systemic infection, sometimes with enormous swelling, high fever, great discomfort and some danger. Locally antiseptic mouth-washes are valuable, potassium chlorate being good in saturated solution with a little phenol added; or the patient may be given frequently, to suck, a "menthol compound" tablet, to be had of manufacturing chemists, of this composition:

Boric acid	.02 (gr. 1-4)
Benzoic acid	.02 (gr. 1-4)
Sodium fluoride	.04 (gr. 1-2)
Sodium bisulphide	.04 (gr. 1-2)
Thymol	.04 (gr. 1-2)
Menthol	.04 (gr. 1-2)
Eucalyptol	.04 (gr. 1-2)
Camphor	.005 (gr. 1-16)
Hydrastine	.005 (gr. 1-16)

This is a non-toxic, alkaline antiseptic which may be used freely. The bowels must be emptied quickly with calomel and podophyllin followed by saline laxative; and rectal feeding then instituted, as the patient's strength often fails rapidly.

GOITER

Patients affected with goiter often want to take medicine in addition to the local application of iodine (tincture or the decolorized tincture). Potassium iodide, half a gram, thrice daily, seems to hasten subsidence of the swelling in some cases. Other patients take iodoform with apparent advantage, in a capsule or tablet,

one centigram three to six times a day. Phytolaccin (the active principle of *phytolacca decandra*) has been lauded, and is given in doses of one centigram (1-6 grain) four times a day. Strict attention should be paid to diet, rich foods being prohibited, and the bowels kept active—securing at least two movements daily, by the use of salines and an aloin pill. Donovan's solution was much used long ago, but arsenic iodide, one milligram (1-67 grain) four times a day, will be found more agreeable.

Exophthalmic Goiter.—Physiologists, pathologists and surgeons now all agree with the statement of Hartley that "clinically" it makes no difference whether the secretion of the thyroid gland is increased or is chemically altered as the result of changes in the blood, in the alimentary canal, or in the central nervous system; the fact remains that "the removal of the growing gland does away with the symptoms, and upon the failure to remove the diseased gland depends no cure." It is, of course, best that medicinal treatment should precede surgical interference, because of the undoubted cures that have taken place. This treatment may be combined with the use of the x-ray (Mayo) or with the administration of milk or serum from thyroidectomized goats, sheep, etc. (Lanz and Moebius.) This method of treatment should not be continued too long, unless operative treatment is contraindicated, since the disease itself tends to diminish the vital resistance and to exhaust the nerve-centers. The earlier the diagnosis and the operation, the easier the operation, and the less dangerous and difficult the after-treatment. Hartley found that the severer types derive great benefit from rest in bed for two or three weeks previous to the operation. The nervous excitation, the tachycardia, and the muscular tremor are so much improved that operation is often undertaken under much more favorable conditions.

Just what cases should be subjected to operation has not been decided, though as a broad rule it may be said that when the bronchocele is the most prominent feature and when internal medication by iodides, tincture of strophanthus, digitalin, etc. fails, thyroidectomy is to be advised. On the other hand, if exophthalmos and tachycardia be most prominent, excision of the superior and middle ganglia of the cervical sympathetic is to be preferred.

Recently a serum treatment has been employed with excellent effect in a few cases. It is prepared by injecting the purined nucleoproteids of the thyroid into some animal: a rabbit or sheep. Beebe, of New York, reports that the serum treatment causes an increase in the percentage of hemoglobin and the number of erythrocytes, (possibly due to the general health improvement and not to any direct action on the blood-forming organs). The therapeutic use of the serum is based on the theory that exophthalmic goiter is a toxemia and the toxin in question is a thyreoglobulin. This theory best explains the striking results obtained in some acute cases with soft thyroids, probably in a simple state of hypertrophy and containing a large amount of colloid matter with but a slight number of cells.

The majority of cases, however, are of the chronic type and do not show at once this rapid improvement. The gland is more cellular and the cytotoxic element in the serum, in the small doses given, is probably too feeble to cause immediate or rapid diminution of the gland. More rapid destruction, moreover, might be dangerous in these cases. There is some reason to think that the serum does have a cytolytic effect; the main fact is that there is a reduction in the size of the gland, and in a few cases it has been restored to apparently normal size. Considering all the facts, Beebe thinks it fair to conclude

that the serum has considerable value in the medical treatment of exophthalmic goiter. The improvements and cures under its use have been too numerous to be ascribed to coincidence, and he believes that under favorable conditions much can be accomplished by careful serum therapy. Of internal remedies best results have been obtained from the use of hydrobromide of quinine. From one to two grams (15 to 30 grains) must be given every 24 hours for a long time—preferably in four to six doses.

Operation for Goiter.—Extensive experience corroborates the assertion of Hardon, who has made a careful study of the subject. (1) Every irregular tumor of the thyroid, no matter how small, should be removed, as only by following this line of procedure can we hope to save the lives of those having malignant growths. (2) Every regular tumor of the thyroid causing symptoms other than deformity, should be resected when, after a few months' medical treatment, its growth is not checked, and no improvement is shown. (3) Avoidance of trauma, care of the stump, free drainage and salt solution to keep full blood- and lymph-vessels, to prevent as far as possible wound absorption, constitute the chief points in operation.

Operation in Exophthalmic Goiter.—One must remember that the worst cases are sometimes those in which no exophthalmos is present. Operation is the only cure yet known; it is not dangerous if done under hyoscine-morphine anesthesia, plus cocaine locally, with clean hands and in properly selected cases. But thyroidectomy should never be attempted in any case when the patient has a dilated heart or an endocarditis of long-standing. Cases most favorable for operation are those in which the gland is more enlarged upon one side than the other; those in which there is a definite tumor formation; those in which

the gland is not excessively vascular; and those in which the enlargement has preceded the Graves' symptoms for months or years. Like other goiters the bronchocele of Graves' disease is often benefited by the local use of iodine.

Removal Under Local Anesthesia.—In some cases conditions are such that removal is not possible under general anesthesia. Here one may inject one dose of hyoscine (gr. 1-100) and morphine (gr. 1-4) an hour before operation and then use a local anesthetic. The solution best to be employed consists of sodium chloride, 12 grains, beta eucain, 3 grains, water 3 1-2 ounces. This is boiled and then 10 minims of commercial adrenalin solution are added. The solution is ready for use as soon as cooled.

Treatment by Iodine.—Bronchocele not sufficiently prominent to demand excision may be greatly reduced by the use of iodine. Perhaps the best way is to apply externally, by means of a camelshair brush—using tincture of iodine to which has been added just enough aqua ammonia to decolorize. A little of this "colorless tincture of iodine" used twice daily will often cause almost total disappearance of a goiter not cystic. It may also be made to enter the deep tissues by cataphoresis (negative pole of a galvanic battery), enabling one to get speedier results. Or from five to fifteen minims may be injected into the fibrous tissue by hypodermic syringe. Great care must be exercised in such injections because if the iodine is thrown into the connective tissue instead of the gland, ulceration will follow, with ugly scar-formation.

GONORRHEA

A urethritis due to infection with Neisser's coccus (gonococcus) is an acute inflammation which requires six weeks' treatment in the first attack, and from two to three weeks in subsequent ones.

During the early stage, when the inflammation is limited to the anterior urethra, the best treatment consists of internal remedies calculated to make the urine bland and unirritating; but if the patient insists upon having an injection from the first he must be instructed not to throw it in far, as by so doing he will force the pus into the deep urethra and by so doing may cause posterior urethritis or even cystitis.

Irrigation treatment is advised by most writers; it should not, however, be used indiscriminately but reserved for cases in which the deep urethra is involved. Permanganate of potassium is used in mild solution.

During the acute stage, when the penis is swollen and edematous, with redness and eversion of the meatus and great tenderness in the urethra, injections do much harm; if anything is used it should be of the mildest kind, like one or two grains of alum to an ounce of water and a little aqueous extract of opium. Excellent results are obtainable from injection of a one-percent cocaine solution with two-percent phenol added, about five minutes before each passage of urine. Later, when the severe symptoms of infection have subsided and the discharge becomes copious, the stronger injections may be ordered, three grains each of alum, acetate of lead and sulphate of zinc to the ounce of water giving the best results of any. At first this may be used four times a day; the second week three times, the third only three, and the fourth only at night, unless the discharge ends in gleet (which see).

Internal treatment is important. In the early stage salicylate of phenol (salol) is by all odds the best remedy. With it cubebs may be combined, a remedy which distinctly modifies *ardor urinæ*:

Phenol salicylate	8.0 (drs. 2)
Oleoresin of cubebs	4.0 (dr. 1)
Codeine sulphate	0.2 (grs. 3)

Mix and make sixteen capsules. Direct: One every four hours. The codeine may be reduced a half in the second prescription and elided altogether in the third.

Potassium bromide at bedtime is good to produce sleep and limit chordee; dose one to two grams (15 to 30 grains); or lupulin may be given in the dose of two grams (Hare). Opium and belladonna suppositories may be ordered if indicated.

Potassium citrate in ten-grain tablet, to be dissolved in a glass of water and taken two hours after each meal, is excellent after the first week, though the salol may also be continued.

When fever is present (in the first few days) aconitine is indicated. A milk diet aids in affording relief at this stage; and an unirritating diet is essential throughout.

When the posterior urethra is affected the irrigation treatment is indicated. This is done with weak solution of potassium permanganate, having a pale wine-color. A fountain syringe is filled with this, a blunt nozzle applied and pressed into the mouth of the urethra as the fluid begins to flow. The patient is directed to relax himself perfectly just as if beginning to urinate, when the fluid will readily flow into the bladder, filling it to the limit; this is expelled and another bladderful introduced, and so on until at least two quarts of the hot solution are used. This is repeated two or three times daily.

The bowels must be kept open, the diet regulated, and as little exertion as possible enjoined until the disappearance of acute symptoms. Here copaiba seems excellent and oil of sandalwood (each in capsule) gives much satisfaction.

When the posterior urethritis is at its height opium and belladonna suppositories are almost a necessity; or if they constipate too much a clyster of four ounces of starch water containing two grams (30 grains) each of potassium

bromide and chloral hydrate may be given at bedtime for several nights. In the worst cases codeine or morphine must be given, though with care.

Chronic gonorrhea usually means either a granular spot which must be burned with silver through an endoscope or a stricture which must be treated with sounds or otherwise. (See "Gleet".) The "candle drainage bougies" are excellent in many cases.

Gonorrhea: Lingeriug.—After a gonorrhea has run for five or six weeks the patient becomes uneasy and wants "something better." To such a one, and to the man with "gleet" the following may be given:

Alum	0.8
Lead acetate	0.8
Zinc sulphate	0.8
Glycerin	16.0
Water	112.0

Direct: Use as an injection three or four times a day. Shake well before using; hold the injection two minutes if possible. Chemists claim that this prescription should not be written, since it contains "incompatibles" and a precipitate is formed. This is exactly what is wanted; it is the retention of some of this precipitate in the urethra for hours which does the good.

Gonorrhea in Women.—For the vulvovaginitis due to Neisser's coccus one may use an injection twice a day of a quart of 1 in 2000 or 1 in 4000 solution of potassium permanganate in hot water, followed by a solution of mercury bichloride 1 in 2000, and a dressing of 5 percent ichthyol in glycerin. Resorcin, in doses of 1 gram (15 grains) may be given internally, three times daily, with advantage. Twice a week silver nitrate, ten grains to the ounce of water, should be used to swab the mucous membrane, and following this, a powder of alum, 3 parts, tannin, 2 parts, should be insufflated. Frequent bathing and other

hygienic means should be employed. If there is complicating cervicitis and metritis, dressings of ichthyol, 10 parts, iodoform 5 parts, glycerin, 200 parts, should be used. Local applications of tincture of iodine or of zinc chloride, 1 in 50, may be employed, and intrauterine injections of about 1 1-2 ounces of the following solution: Alum, 2 1-2 parts; tincture of iodine and alcohol, each 25 parts. Urethritis should be treated by the balsams, the alkalis, and by irrigations of silver nitrate or protargol solutions, or a 1-percent aqueous solution of thallin sulphate.

HANDS

Acute Phlegmons of the Hand.—According to Knavel there are five great spaces, with their tributaries, in which pus can accumulate in phlegmons of the hand: First, the dorsal subcutaneous, which is an extensive area of loose tissue, without definite boundaries, allowing pus to spread over the entire dorsum of the hand. Second, the dorsal subaponeurotic, limited upon its subcutaneous side by the dense tendinous aponeurosis of the extensor tendons, upon the deep side by the metacarpal bones, having the shape of a truncated cone, with the smaller end at the wrist and the broader at the knuckle. Laterally the aponeurotic sheet shades off into the subcutaneous tissue. Third, the hypothenar area, a distinctly localized space. Fourth, the thenar space, occupying, approximately, the area of the thenar eminence, to the flexion-adduction crease of the thumb, not going to the ulnar side of the middle metacarpal. It should be remembered that this space lies deep in the palm, just above the abductor transversus. Fifth, the middle palmar space, with its three diverticula below along the lumbrical muscles, limited by the middle metacarpal bone upon the radial side, overlapped by the ulna bursa upon the ulnar side, and separated from the thenar space by a partition which is very firm everywhere

except at the proximal end, where it is rather thin. A small isthmus can be found leading from the proximal end of the space under the tendons and ulna bursa at the wrist up into the forearm.

Defective Hand Cleaning.—In attempting to secure asepsis of the hands for operation or dressing of wounds the surgeon is apt to scrub inadequately two parts of the hands: the center of the palm and the spaces between the fingers near their base. Of course the chief danger is in the dirt under the finger-nails and around the roots of the nails, but the other two points should always be remembered.

Eczema of the Hands.—By reason of much scrubbing and enforced application of hot water to the hands, many surgeons develop eczema of the hands—especially those who use the potassium permanganate and oxalic-acid solutions. No application has proved so serviceable in keeping the skin soft, supple and pliable as the oleate of bismuth ointment, the composition of which is as follows:

Bismuth oxide	4.0 (dr. 1)
Oleic acid	32.0 (oz. 1)
White wax	12.0 (drs. 3)
Vaseline	64.0 (ozs. 2)

The addition of a few drops of the oil of rose renders the ointment more agreeable.

Neuroma of Hand.—Quite frequently piano players, telegraphers and others who make constant use of their fingers develop neuromas between the metacarpal bones—small, painful tumors of a few months' growth. These should be removed under cocaine with most careful anti-septic precautions lest thecitis or neuritis be set up. Great care must be exercised not to injure the nerve.

Phenol Solution for the Hands.—Some doctors claim that solutions of bichloride of mercury make the hands too rough if used frequently. For these a solution of phenol may be substituted, though it is not so effective.

To be of any use whatever, it must be made as strong as 1 in 40 for the hands (and 1 in 20 for cleaning the skin to be cut). That means one full ounce of liquefied phenol (95-percent carbolic acid of the old Pharmacopeia) to a little more than a quart of water. Indeed, it is better to use one ounce to the quart, to be sure that no mistake is made and a useless solution employed. If the hands be dipped in this solution during the course of an abdominal section they must be rinsed in plain water before being put back into the peritoneal space. Phenol cannot be used often upon the hands without serious results.

To Clean the Hands Quickly.—When it is necessary to clean the hands quickly (as in emergency work, or merely to make a hurried dressing), mix equal parts of hydrogen dioxide and liquor potassæ. Scrub the hands as carefully as possible; then of this mixture pour about one teaspoonful in the hollow of one palm and thoroughly wash the hands with it. Next carefully clean the nails, and then pouring a second teaspoonful the same as before, saturate the nail-brush and go over the whole surface of both hands, taking special care to scrub under and around the nails. After this is done it is best to pour the third and last spoonful in the hand and wash thoroughly in it for about three minutes. Then scrub the hands thoroughly with thymol soap (any other liquid germicidal soap would do as well) and rinse them either in sterilized water or in bichloride solution 1 in 1000. This partial sterilization makes the hands soft and white. Experience with this method shows it to be valuable also to sterilize the skin of patients before operations; and with the same ease. It is well, however—"to make assurance doubly sure"—to wash the hands for two minutes in dilute alcohol, one-third water to two-thirds alcohol, before the final rinsing.

Turpentine for the Hands.—Pure oil of turpentine is a strong antiseptic and is very useful in cleaning the hands

for operation when one cannot use the permanganate of potassium and oxalic acid method (which ought to be employed when one has recently had the hands in pus and yet must operate). It is generally used improperly. The correct procedure is to scrub the hands with soft soap and warm water—running water if possible, if not, the bowl emptied and refilled at least twice—for at least five minutes; then to dry the hands thoroughly upon a clean (but not necessarily sterile) towel; and then to cut the finger-nails “to the quick.” The turpentine is then poured over the hands and rubbed in thoroughly around the roots and ends of the nails and between the fingers; two minutes at least being devoted to this. Finally the hands and finger-nails are to be scrubbed in soap and clean warm water and then soaked two minutes (by the watch) in 65-percent alcohol. They are then ready for immersion in the 1 in 2000 sublimate solution.

HEMATEMESIS

Vomiting of blood may be from (a) an injury to the stomach, (b) from gastric cancer or (c) from gastric ulcer. Injury to the stomach by penetrating wound means an abdominal section; if by a blow, internal medication may be relied upon. Hemorrhage from carcinoma of the stomach can be treated by medicine only. Hematemesis dependent upon gastric ulcer should be treated by total abstinence from gastric feeding and by internal remedies; if it occur more than twice, by abdominal section and excision of the affected area, with or without a gastroenterostomy, as indicated.

The non-operative measures are, first, swallowing small pieces of ice, whole.

A pill containing acetate of lead in dose of one decigram (1 1-2 grains) with half that amount of pulverized opium is a combination employed for many years.

One and a half grams (23 grains) of tannic acid may be given in three or four capsules and repeated in an hour if needed; but it sometimes of itself excites vomiting.

Ergotin may be given every half hour four times, but is dangerous in the dosage usually advised.

Adrenalin chloride, hypodermically, is highly commended.

As in other forms of hemorrhage, a full dose of atropine, repeated as necessary, controls the bleeding better than any other internal remedy.

Curative Treatment.—If hemorrhage recur again and again, abdominal section is always to be advised, as in most cases the cause of hemorrhage (unless cancer) can be removed, and the disease thus cured, without great danger.

Oxide of Silver for Hematemesis.—Gastric ulcer not subjected to operative treatment may lead to alarming hematemesis. Silver oxide is advised to control the bleeding, doses of a centigram (1-6 grain) three or four times a day giving good results when there is a tendency to slight daily recurrences. It not only acts as a local astringent but it is said to be a powerful nerve sedative, thus helping to allay the nervous agitation arising from fear; and this is a most important feature of many cases.

HEMOPHILIA

This subject is so intimately associated with surgery that every operator must have it in mind in deciding about operating upon a stranger, fatal hemorrhage having taken place more than once from a trifling incision. Nevertheless, conditions sometimes demand operative work, under which circumstances the dangers must be fully explained. Excessive care must be taken as to hemostasis. The diseased condition is amenable to treatment, the long-continued administration of calcium chloride

having been followed by cure in some instances. Even the arthritic lesions have been vastly benefited by the same remedy.

Joint Lesions in Hemophíliá.—The liability of the joints to become affected in hemophilia must never be forgotten when a patient complains of some chronic irritation of a joint. The symptoms vary according to the stage of the disease, and may be grouped in three classes: (1) In some, intraarticular hemorrhage is the only lesion; the joint suddenly becoming swollen and painful, usually without history of even a trifling injury, when if the existence of hemophilia is known, there should be little difficulty in recognizing the character of the trouble—but in case of doubt aspiration will show the presence of blood and make the diagnosis unmistakable. No attempt should be made to evacuate the joint, as it will instantly refill. Immobilization and internal medication are the only measures indicated. (2) The pain, fever, slight swelling and tenderness subside in a week or ten days—when if treatment is unsuccessful, there is recurrence of the hemorrhage with even more distention; and after several repetitions there are marked articular and peri-articular changes—thickenings—so that motion becomes limited, this constituting the second stage of the arthropathy. (3) In the third stage there is complete ankylosis—for which absolutely nothing can be done.

HEMOPTYSIS

Candler advises to give, at once, hypodermically, atropine sulphate, gr. 1-250. Ergotin or sclerotonic acid may follow. A small dose of morphine will quiet patients; but one should not give this drug, however, till hemorrhage has been controlled, and then not let the patient know morphine is given. It should always be borne in mind that ether or ethyl chloride sprays to nape of neck

and over the sternal notch often check hemorrhage, and nasal sprays of liquor ferri subsulphatis, one dram in eight ounces of water, will prove extremely useful. A certain quantity of fine spray will enter the bronchi.

HEMORRHAGE

Hemorrhage of sufficient importance to demand a doctor's attention usually demands ligation of the bleeding vessel, enlarging the cut sufficiently (generally under cocaine anesthesia or freezing) to permit it to be seized with forceps.

When this cannot be done (for one reason or another) a compress soaked in a solution of antipyrin may be applied as firmly as possible; or a tight packing of iodoform or sublimated gauze may be put in. Constriction of an extremity by an Esmarch or Martin bandage should not be continued longer than two and one-half hours. Bleeding from particular organs will be discussed under the respective headings devoted to them.

Internal Hemorrhage.—From the use of enemas of hot milk remarkable results are claimed by Solt. He advises introduction by means of a piston syringe; the intermittent flow gives better results than a constant stream from a fountain syringe. By this means it is said that hemorrhages from the uterus, bladder, stomach, lungs, and in fact from every part of the body have been checked. In some cases more approved hemostatics had been used for hours without result, and the milk was immediately successful. At least a quart should be given at once, with nothing added but a little salt to make it absorb more rapidly. The enema should be repeated in an hour, even if there is no return of the hemorrhage. Of course the usual local measures are employed at the same time, when the source of bleeding can be reached. The method of its action is not certain, but milk contains a

large number of substances which are recommended as hemostatics—iron, phosphoric acid, sulphuric and nitric acids, but above all, lime salts. The enzymes and leucocytes also tend to cause an increase in the fibrin ferment. The milk loses its hemostatic power if it is given by the stomach. But while one is experimenting with milk he must not forget that atropine is one of our best general hemostatics.

HEMORRHOIDS

The proper treatment of piles may be summed up in a few words. External tags (old piles) may be snipped off under cocaine or ethyl-chloride freezing. A large, recent, external pile may be cut around, ligated and removed. Internal hemorrhoids demand divulsion of the sphincter and under complete anesthesia, and then removal by (1) excision and sewing up of the cut after ligation of vessels, (2) ligation in an incision made around the base and then excision, or (3) use of a clamp and cautery. The last-named gives least pain and most satisfactory results if properly done.

When the patient will not consent to operative measures the injection method may be used, treating by injecting only one pile at one sitting, introducing 15 to 20 drops of pure phenol, or equal parts phenol and fluid extract of ergot, the fluid to be thrown exactly into the center of the pile-mass as otherwise sloughing may be induced.

If neither plan of treatment will be permitted, palliative measures alone can be practised. These are (1) astringent injections (tannic acid one gram—15 grains—to the pint of water, or twice that strength of alum, or one in eight of tincture of hamamelis) especially when there is bleeding from internal hemorrhoids. (2) Use of astringent washes, like witchhazel or liquor antisepticus, U. S. P. Very hot water frequently applied is very

comforting. If the pile can be well greased and pushed above the sphincter immediate comfort will result if it be one which originated above the sphincter and came down with bowel-movement, as is often the case. (3)

Application of astringent ointments like

Gallic acid.....	0.5 (grs. 8)
Extract of belladonna.....	0.3 (grs. 5)
Cocaine hydrochloride.....	0.1 (grs. 1 1-2)
Lanolin.....	16.0 (oz. 1-2)

Apply three or four times a day.

Aesculin in Hemorrhoids.—When a patient will not submit to operation for piles, suppositories of tannic acid may be ordered or an ointment prescribed; but better results may often be obtained from laxatives (cascara preparations are much better than anything containing aloes—a drug which aggravates hemorrhoids and often causes much anal irritation and itching) and from aesculin. This glucoside is the active principle of the horse-chestnut, a bitter tonic and stimulant to the circulation, having especial tendency to overcome stasis in the portal circulation—including the hemorrhoidal veins. It is obtainable in granule form, each granule containing 1 milligram (gr. 1-67). From three to five of these granules may be ordered administered every two hours until the burning and itching are decidedly relieved.

Hemorrhoids and Rectal Fissure.—Altogether too many people are allowed to suffer from hemorrhoids and anal fissure without examination. It is so easy to give a little “pile-ointment” or a few suppositories; it is so “nasty” to make a careful examination. And so—patients either suffer for years or drift into the hands of the “pile-specialists.” Yet a rectal speculum costs but \$2.00 and a Paquelin cautery only \$8.00; these with a little chloroform and some common-sense may be made

to cure these conditions—unless excessively bad—to the unbounded relief of the patient and the great credit of the family doctor. Less ointments, more fire, should be the rule.

Hemorrhoids: Treatment after Operation.—

When piles have been removed either by ligature or clamp and cautery, the sphincter having always been forcibly dilated prior to operation, it is imperative that the rectal packing extend very high into the gut and that it be tamped in very tightly. This pack is, preferably, iodoform gauze, though dry bichloride gauze will do. Over this a pad of absorbent gauze or cotton is placed, held by a T-bandage applied tightly. The outside gauze may be changed every day, if desired, but the packing must not be disturbed for from four to six days, during which time peristalsis is to be controlled by opium or morphine by the mouth. When accumulation of gas becomes distressing, however, the plug must be removed and the bowels permitted to move. In many cases it is best to give a good saline laxative and let the bowel-movement force the packing out—assisted by the patient's own fingers—as this will cause far less suffering than if removed by doctor or nurse. If it be left until the fifth or sixth day, however, it usually slips out without much discomfort. An enema should be taken immediately after the first bowel-movement, and daily thereafter for a week.

Inflamed and Protruding Piles.—The following combination is recommended in the treatment of inflamed and protruding piles:

Cocaine hydrochloride	0.17 (grs. 2 1-2)
Sol. adrenalin chloride (1 : 1000) ..	2.00 (dr. 1-2)
Bismuth subnitrate	0.67 (grs. 10)
Petrolatum (liquid)	30.00 (oz. 1)

M. Ft. unguentum. Sig.: Bathe the parts in cold water and apply the ointment after each stool.

Injection of Hemorrhoids.—An injection highly praised for cure of a single pile, when a patient will not submit to operation, consists of:

Tannic acid.....	1.5 (grs. 20)
Phenol	8.0 (drs. 2)
Glycerin	8.0 (drs. 2)
Water	16.0 (oz. 1-2)

This makes a 25-percent solution of phenol, which, plus the astringent tannin, quickly coagulates the blood, when thrown into the pile. It is so prompt in its solidification of the hemorrhoid that the point where the hypodermic needle entered often remains open. As much as a syringe-ful may be injected (through a rectal speculum) into a large hemorrhoid. There is not much pain or discomfort after its use; and the pile is usually cured. Only one should be injected at one sitting.

Nitric Acid for Piles.—For many years nitric acid has held high favor in the management of bleeding hemorrhoids. Internal piles are treated by the application of a drop or two (through a speculum) to the hemorrhoidal mass; not to the whole surface, but simply to one or two points. It is not painful. Two or three applications to the dilated vessels are sufficient. For bleeding piles a dram of the dilute acid is added to half a pint of water and applied with a little absorbent cotton. Quite promptly the bleeding ceases, the protruding mass shrinks from constriction of the vessels and the heavy, dull, wearying discomfort subsides, even though the pile-tumor cannot be returned within the sphincter.

HEPATIC COLIC

Colic due to the passage of a small stone down the cystic and common ducts or to the attempted entrance of a large stone into the cystic duct is one of the most

fearful of all pains. For its relief there is nothing so satisfactory as the injection of one tablet of

Morphine hydrobromide.....0.02 (gr. 1-4)

Hyoscine hydrobromide.....0.001 (gr. 1-67)

Cactin0.001 (gr. 1-67)

or the hyoscine-morphine-cactin tablet [H-M-C, Abbott] now on the market. It may be repeated in an hour and a third dose may be given two hours later if necessary. It does not give so great relief when taken by mouth. If instant relief is demanded a little chloroform may be given by inhalation until the opiate has time to take effect. Hot fomentations of turpentine to the abdomen over the region of the gall-tract may afford some comfort to the patient; but it must not be applied by hard rubbing, since manipulation might rupture a distended gall-bladder. It is a common custom, nowadays, to give large doses of olive oil. This is not objectionable if it does not cause vomiting (anything which produces emesis is dangerous), as it relaxes the bowels and possibly helps the passage of small calculi. The lumps of "human soap" resultant from action of the intestine upon the oil must not be mistaken for gallstones, which they closely resemble. Half a pint of the oil may be given within two or three hours. After the attack, to prevent recurrence, an outdoor life should be ordered, with salines at night, and a good, nutritious diet devoid of much fat, without wines or beer, should be enjoined; too much emphasis cannot be laid upon the necessity for careful, thorough mastication of the food, by which the quantity taken may be reduced fully one-half. One should not be hasty about urging operation, because after relief of one paroxysm the patient may carry the stone for many years without any discomfort whatsoever; but if the attacks return again and again nothing will afford relief but removal. If the gall-bladder be badly affected it also may be removed.

HEPATITIS

Inflammation of the liver is not a surgical affection save when it ends in suppuration. But as the province of the surgeon is to prevent as well as cure suppurative conditions the proper treatment of hepatitis may well be considered here. By the term hepatitis is meant the true, acute, inflammatory process which results from the introduction of pathogenic microorganisms through wound or otherwise and not that condition generally called "chronic hepatitis" which is not an inflammation at all.

The first essential is to secure perfect rest in bed, to which end the application of a huge mustard-plaster aids; or hot cloths may be ordered for the right side, to minimize the pain. Calomel in two centigram doses (gr. 1-6) every hour until free purgation results is an almost universal treatment now, and it may well be followed by effervescent saline laxative (Abbott's). To check the fever the best drug is aconitine in doses of two milligrams every hour until the desired result is obtained and then as often as necessary to keep the temperature down. Active kidney secretion must be promoted by the use of potassium citrate, one to four grams (15 to 60 grains), three or four times a day. If the pain is severe half-decigram doses of codeine sulphate (1-2 to 1 grain) every three or four hours may be given by mouth.

If in spite of this treatment the trouble goes on to the formation of an abscess, as indicated by rigors, sub-normal temperature, night-sweats, hectic fever, etc., the pus must be liberated as soon as possible. The liver must be exposed over a considerable area, by cutting away the ribs, usually; and if adhesions have not formed between Glisson's capsule and the parietal peritoneum, gauze must be packed between the liver and belly-wall in every direction until the adhesion does take place. In

forty-eight hours, without removal of the gauze, the pus may be sought by use of an exploring needle of large size thrust in various directions until the abscess is found; it must then be opened by free incision, wiped out with gauze, thoroughly, and then gently packed with gauze for drainage. It should not be washed out with hydrogen dioxide before the first week of drainage. Subsequently it is to be managed as any other huge abscess which must heal by granulation from the depths. Dysentery is likely to prove troublesome after evacuation; it may be controlled by use of opium, camphor and acetate of lead, a most satisfying prescription being half a decigram of each (3-4-grain) in a capsule every three or four hours.

HERNIA

It is said that one in every eight men has some form of hernia. Yet how many doctors think of advising an operation? They know that operation is perfectly safe and cure almost certain (in my own work—now covering several hundreds of cases—there has never been a death and less than five per cent of recurrences); yet they prefer merely to fit a truss rather than urge radical cure. It is hard indeed to account for their indifference to the future welfare of their rupture cases—probably timidity and a feeling engendered by the failures of a few years ago that cure is not sure. It is the duty of every doctor to explain the advantages of operative treatment to every patient afflicted by hernia and only permit the wearing of a truss under serious protest.

One of the instances in which scopolamine-morphine anesthesia is particularly indicated is reduction of strangulated hernia. The relaxation is almost as complete as in chloroform narcosis and there is not the vomiting which usually follows general anesthesia and which sometimes cannot be distinguished from early stercoraceous emesis.

Diaphragmatic Hernia.—The colon or a part of the stomach may crowd through a hiatus in the diaphragmatic muscular tissue, carrying the parietal peritoneum and the pleura with it as a sac—forming a diaphragmatic hernia. The only possible treatment is an abdominal section close to the ensiform, withdrawal of the hernial contents and closure of the hole with 20-day chromicized catgut. Recurrence may be anticipated.

Hernia Cerebri.—Hernia cerebri is due to infection of the brain near the opening through which the inflamed tissue protrudes. Therefore the treatment must be largely antiseptic, but antiseptic in a mild way, since active agents like bichloride increase the congestion. Probably the best treatment consists in enlarging the opening, if possible, for a half inch on every side of the extruding brain-mass and dusting the wound and brain with iodoform, applying antiseptic gauze over it from time to time. Secretions should be gently wiped, not washed, away. If abscess forms (not common) it must be opened and drained. Great patience must be exercised as the hernia sometimes persists for weeks and then gradually recedes. If persistent, the brain finally becomes a mass of granulation-tissue which so utterly destroys the cortex, that the whole thing may as well be removed by burning with Paquelin cautery.

Hernia in Children.—Hernias in children are most often of the umbilical and inguinal variety; though there are many cases of femoral hernia reported this condition is comparatively rare before the age of puberty. Those who have much to do with the surgical treatment of children are struck by the number of cases of hydrocele of the cord which have been treated as though this condition were hernia. This perhaps is the only condition, certainly the only condition in infancy, which is likely to lead to error in diagnosis. Umbilical hernia of infancy rarely calls for operation, being readily cured by pressure, best applied

through the medium of a pad with a flat surface secured in position by adhesive straps. As to the treatment of inguinal hernias, the general opinion of the profession is undergoing a change. It was formerly held that the great majority of such ruptures could be cured, and permanently cured, by a properly fitting truss. Some cures certainly have thus been effected. As to whether or not this cure is a permanent one, some are not decided; others contend that the hernia will come down again when the boy reaches manhood, with its strains. Certain it is that operation is safe, and is almost sure to give perfect and permanent cure if properly performed.

Inguinal Hernia in Young Children.—This is a condition which should not be neglected. As a rule it is best, before resorting to operation, to try to cure the rupture by means of a truss or other mechanical measures, with the following exceptions to the general rule: Operate (1) in case of strangulation, or where strangulation has been reduced by taxis; (2) upon all cases not controlled by truss; (3) when truss-wearing causes pain; (4) when the patient cannot be observed regularly; (5) in cases associated with reducible hydrocele, or fluid in the hernial sac. But operative treatment being perfectly safe, and absolutely sure to effect a cure if properly done, every patient should be subjected to the Bassini method, which deservedly occupies first place in the treatment of inguinal hernia, for it deals thoroughly with the sac and with the canal. There are two points in this operation deserving of special emphasis: First, in splitting the aponeurosis of the external oblique, the division should be made in the cleavage line, as high above Poupart's ligament as possible; if the division is made directly over the inguinal canal, the lower flap of aponeurosis is so short that it is difficult to put in the second row of sutures without tension and subsequent danger of sloughing and splitting. The longer flap obviates

this danger and gives a stronger wall. The other point is this: Lloyd has demonstrated that in recurrences the relapse is at the lower end of the wound, and the rupture is of the direct type; therefore, it is of the greatest importance accurately to coapt the internal oblique and transversalis muscle to Poupart's ligament at the lower end of the wound. Children bear surgical work remarkably well, and there is no major operation in surgery attended with as little shock and giving as satisfactory results, as the operation for the radical cure of inguinal hernia. The curability of rupture in early childhood by operation is a settled question. The safety of the method is generally acknowledged. The only question then is, shall we operate or shall we apply a truss? The former plan requires about two weeks to effect a cure, the latter requires two or more years, and is far more uncertain.

Injection.—Schwalbe's method of treatment consists in reducing the hernia and then injecting pure alcohol around the sac on every side. The resulting irritation of serous surfaces and long-continued induration sometimes causes obliteration of the sac in favorable cases.

Local Anesthesia in Operations for Hernia.—Bodine claims that by proper cocainization this operation can be rendered absolutely painless. It is necessary to employ only a one-fifth of one-percent solution and never inject more than one-half grain of cocaine, so that serious symptoms of poisoning never occur. This solution is used for skin infiltration and cocainizing the nerve trunks; for the deeper tissues a solution half this strength is used. The solution should always be fresh, as aqueous solutions of cocaine are certain to deteriorate. The method is as follows: The skin is first infiltrated, the proper depth to which the needle is penetrated into the skin being such that the needle is always visible just beneath the surface. The skin having been anesthetized the needle is plunged

through the skin and the tissues around the external ring are infiltrated. The skin incision down to the aponeurosis is then made. If there is much fat this is also infiltrated with a 1 in 1000 solution. The ilioinguinal nerve is then exposed and is cocainized at the higher point. The dissection can be carried out further into the external ring; the two flaps of fascia are retracted, exposing the shelving border of Poupart's ligament externally and the conjoined tendon on the inner side. The iliohypogastric nerve can be searched for, and if found, cocainized; which will materially assist in securing painlessness of the operation. If it is not found the margins of the internal ring and the adjacent part of the conjoined tendon are injected with a one-tenth of one-percent solution. Along the center line of the long axis of the protrusion a line of infiltration with the same solution is made. The sac is then opened and the contents dealt with as occasion requires; there being practically no sensation in the omentum and intestines no application of cocaine to them is necessary. The neck of the sac is infiltrated, dissected away from the underlying cord, ligated and amputated. The genitocrural nerve is sought for, and if it is found and cocainized the operation can be completed in any manner the operator prefers without additional cocaine. If the nerve is not found, the operation must be completed as speedily as possible, as there will quickly be a return of sensation. The ultimate results are as good as under general anesthesia.

Reduction of Hernia.—When the contents of a hernial sac, previously reducible, cannot be returned to the abdomen the patient should be given, hypodermically, 1-4 grain of morphine and 1-250 of hyoscyamine, or even the latter alone, repeating if necessary. In half an hour a good dose of strychnine should be injected if the pulse is weak. Then with the patient upon his back, a pillow under the hips and knees drawn up (and supported by

some one) to relax all muscles a few drops of chloroform may be given by inhalation; relaxation will be complete in a few minutes and the hernia may spontaneously disappear. If not, gentle taxis may be instituted; but no force must be used and efforts at reduction should not be continued more than fifteen minutes. The H-M-C combination seems admirably adapted for these cases. If the trouble cannot be relieved in that time operation is needed, and soon.

Strychnine in Strangulated Hernia.—Often the nervous depression in strangulated hernia is alarmingly apparent when the surgeon reaches the patient's bedside; indeed it is so great that strong men die from the shock of what, under other conditions, would be a trivial operation. When this condition is present, the first thing to be done after ascertaining the nature of the trouble is to inject four milligrams (about 1-15 grain) of strychnine sulphate. In a few minutes a dose of the hyoscine-morphine-cactin anesthetic may be injected, and by the time everything is ready for operation (which may often be done under cocaine) the general condition of the patient will be much improved.

HICCOUGH AFTER OPERATION

Occasionally a persistent hiccough occurs some hours after injury or serious operation and becomes quite distressing to the patient. Possibly the best thing to control it, after application to the throat of clothes wrung out of ice-water has failed, is "Hoffmann's anodyne," the spiritus ætheris compositus of the U. S. P. It is composed of ether, alcohol and heavy oil of wine, hence is a stimulant of almost instant action, yet prolonged as well; the ether is taken up immediately, the alcohol somewhat later and the oil of wine quite a time afterward. The dose is one to two teaspoonfuls every hour until relieved. Sometimes a capsule of camphor with musk arrests hiccough which has

resisted all other medication but pure musk is very hard to get and is of great cost.

HIP-JOINT DISEASE

Coxalgia.—Technically “pain in the hip-joint”; often employed, incorrectly, by the older writers as synonymous with “hip-joint disease”.

Coxarthrocace.—Fungoid inflammation of the hip-joint is a form of tuberculosis. (See “Tuberculosis of Joints”.)

Coxitis.—Inflammation of the hip-joint does not differ from that of any other joint (see “Arthritis”) when of any origin other than tuberculosis.

HYDROCELE

All things considered, it is best to advise excision in most cases of hydrocele. Plastic methods (injection of some irritating fluid into the almost emptied sac) are not without danger and frequently fail, though 95-percent carbolic acid, one dram, is generally regarded as harmless and often cures. But removal of the sac, save enough to cover the testicle, is so perfectly safe in clean hands—and so sure—that one should not hesitate to insist upon it as a method of choice.

Injection of Hydrocele.—When a patient will not submit to the simple, safe (in aseptic hands) operation for hydrocele the injection method may be tried. The best fluid is tincture of iodine in full strength. Some prefer half iodine tincture and half pure phenol (carbolic acid). The scrotum is thoroughly scrubbed and dried, washed with ether and rinsed with 65-percent alcohol; then surrounded with a sterile towel, preferably taken from the boiler in which the trocar, canula and hypodermic syringe have been cooked. The trocar and canula are thrust into the sac, avoiding wounding of the testicle, and the fluid

allowed to escape. Then the iodine is injected either through the canula or with the hypodermic needle introduced through the same hole. The sac is gently rubbed so as to distribute the iodine and the external opening is closed with collodion. The inflammatory reaction is not severe, but adhesion is sometimes secured between the scrotal and the testicular layers of the tunica vaginalis, with final obliteration of the sac.

HYDROGEN DIOXIDE

Entirely too much "peroxide" is used in the treatment of suppurating wounds as also too much water and liquid antiseptics of all sorts. The best treatment for a suppurating, granulating surface is merely to wipe out, gently, with a little absorbent cotton or gauze, all surplus secretion, exercising great care not to disturb the delicate granulations from which the new tissues must be formed. This is particularly applicable to pyothorax. The hydrogen dioxide is applicable chiefly to those suppurating cavities which do not drain well and cannot be reached with the cotton; and also to those suppurating surfaces which show a tendency to be abnormally slow in healing—here the irritating effect being just sufficient to stimulate the sluggish granulations.

HYPODERMOCLYSIS: CAUTION IN

When injecting large quantities of normal salt solution beneath the skin one must not allow too much fluid to accumulate at one area, otherwise necrosis may occur. It is best, therefore, to shift the needle to various parts not by swinging it from side to side, but by partly withdrawing it and reinserting it to another area.

INCONTINENCE OF URINE

Women occasionally complain that they pass their urine during sleep. To such patients santalin may be

given in doses of one to two decigrams (1 1-2 to 3 grains) three times daily. It often checks the incontinence after everything else has been used; but equally often it does little or no good. Wetting the bed by little girls usually means masturbation; even small children, mere babies, practise it; in which cases bromides and salicin are advisable.

INFECTIONS: LOCAL

The treatment of these troublesome and sometimes fatal conditions is well described by Weider, of Philadelphia. He decries the folly of waiting until an abscess or boil "points," thereby increasing the opportunity for further infection as well as prolonging the most painful period of the entire process, and calls attention to the fact that any kind of a poultice can do nothing but accentuate all the undesirable features of this waiting.

The most immediate relief of pain, the quickest process of repair, and the surest preventive against secondary infection are secured by immediate incision over the point of greatest tenderness, no larger than necessary, but deep enough to allow some bleeding, and reaching if possible the focus of infection. The wound should be allowed to bleed as freely as it may, and then, whether or not pus be found, should be thoroughly swabbed out with phenol, lightly packed with gauze, and a wet bichloride dressing applied.

The patient is given tablets of bichloride of mercury, instructed how to make a 1 in 1000 solution, and told to use it, as hot as he can bear it, three times a day, soaking the affected part for a half hour, without removing the dressing. In the majority of cases, if seen in time, this treatment is abortive, and when the patient appears next day all symptoms will be found improved. Should the process, however, have gone on to actual pus-accumulation

or to necrosis, the symptoms of inflammation will have greatly subsided and the pain have either disappeared or be markedly lessened, and there will be found more or less discharge, purulent or otherwise. The use of the probe will then invariably indicate the seat of infection, either as an accumulation of pus or as the characteristic "core." If the former, it should be freely exposed, using scissors preferably; if the latter, it should be removed with forceps, experience having proved the use of the curet inadvisable in these cases. Light packing and the repetition of the bichloride dressing is then resumed.

Weider closes his article with the following summary:

"1. Poultices, so-called antiphlogistics, etc., are useless in the treatment of local infections and do harm by causing greater destruction of tissue and delaying proper remedies.

"2. Immediate incision over the point of greatest tenderness should always be practised, followed by carbolicization of the wound to destroy the nidus of infection, and then a wet bichloride dressing should be applied.

"3. Free incision with constant wet drainage should be the rule in the presence of pus.

"4. Dry drainage, especially when saturated with coagulative powders, is ineffectual and harmful because of the 'caking' that occurs on the surface, sealing the cavity.

"5. Cases, especially with drainage, should receive soakings with hot bichloride solutions thrice daily. Hot salt solution or water may be used if the bichloride appears too dangerous.

"6. Waxed paper should not be used over wet dressings, as it forms them into moist warm poultices, which are objectionable.

"7. Never curet infections primarily, excepting carbuncles, which should always be curetted and carbolicized.

"8. Gauze selvage, when soaked in bichloride solution, makes a conveniently handled and effectual packing.

"9. Palmar infections of the fingers and hands are more serious than dorsal infections.

"10. In incising for the palmar infections of the fingers, continue the incision until pus or the bone is reached, and do it without delay."

INFLAMMATION: BIER'S METHOD OF CURE

The application of dry heat for the cure of inflammation (known as the Bier method) has been given extensive trial recently.

The patients selected for treatment were those in whom no cure could be expected by simply placing the part at rest; as a rule they were patients in whom operative procedures were indicated but who declined. The cases included acute cellulitis of the extremities, bursitis, phlegmon of the tendon-sheaths of the hands, lymphangitis, furuncles, osteomyelitis, tuberculous gonitis, gonorrheal gonitis, erysipelas of the extremities, epididymitis, etc. The best results were obtained in the acute inflammations. The method gives better functional results, it lessens the duration of treatment and relieves pain. Bier especially emphasizes the alleviation of pain. The technic of the method is not simple and easy; one needs months in order to know it thoroughly. Experience and judgment are necessary for success.

INGROWING NAILS: TREATMENT OF

Free application of dried powdered alum is sufficient to cure most cases of ingrowing nails in about five days. The applications are never painful in the least, and the destruction of the pathologic tissue results in the formation of a hard, resistant and non-sensitive bed for the nail, a perfect cure for the ingrowing tendency. The non-

toxicity of the alum, its easy application, and the good results render it the treatment of choice for cases in which surgical intervention is not contemplated. A fomentation of soap and water is applied in the space between the nail and its bed, tamponing with cotton to keep the alum in place, and repeating the application daily. The suppuration rapidly subsides, and pain and discomfort are relieved very soon.

A very good way to treat ingrowing toe-nail when the patient does not desire an operation is to make a solution of liquor potassæ, U. S. P., in water—two drams to the ounce:

Liquor potassæ	8.0
Water	32.0

and saturate a small bit of absorbent cotton with this. The cotton is to be pressed gently in between the upper surface of the nail and the mass of tender granulation-tissue. The alkali soon permeates the substance of the nail without irritating the sore; but the cotton must be kept constantly moist to do the work well. The softened part of the nail is to be carefully wiped off every morning. In a few days the nail will have become so thin and soft that it can be cut away without pain. The applications must, however, be continued until all granulations disappear and healing is well under way.

INTESTINAL OBSTRUCTION: TREATMENT AFTER

It is important that the patient be disturbed as little as possible, yet an enema is a good thing to start the peristaltic wave downward soon after the bowel has been opened, early and thorough evacuation being essential to recovery, for retention of the poison in the intestinal tract is as dangerous as the obstruction which caused the toxic agents to form. Thirst is, therefore, to be quenched by small

sips of iced, effervescent solution of citrate of magnesia; but little water ought to be given by mouth during the first twenty-four hours. Large enemata of warm, slightly salt, water may be given with advantage every six hours. Perfect quietude is imperative—anxious friends must be driven out and the patient made to sleep if possible. The first few hours after relief of intestinal obstruction are critical ones, and too great care cannot be exercised to secure perfect tranquillity for the patient. No matter how much complaint may be made of pain, morphine must not be given—it increases the danger of paresis of gut—almost always an exceedingly serious menace to life. No food should be given by mouth until more than forty-eight hours have elapsed, but a few nutrient enemata are advisable if the patient be weak or complains of hunger. Liquid diet for the next two days is to be ordered.

INTUSSUSCEPTION

Nothing but operative treatment is to be advised in these cases; but when the relatives will not consent to immediate abdominal section, the surgeon may still do something while waiting. But, first of all, he should freely explain that early surgical interference is indicated in order to free the bowel from a position which threatens to render it necrotic by disturbance of the mesenteric circulation; this nutritional disturbance of the bowel, due to occlusion of the mesenteric vessels, must be relieved as soon as possible, before the infection of the peritoneal cavity promptly annihilates the results of the operation. But, before urging operation, the doctor must be pretty sure of his diagnosis, since it is humiliating to be discharged and have some “granny” cure the patient by a simple enema.

The diagnosis of intussusception is easy. It depends upon feeling the “lump” of the invagination, and the passage of bloody mucus per anum. But the examination

of the abdomen should invariably be conducted under general anesthesia. The most important therapeutic indication consists in the reestablishment of the obstructed mesenteric circulation. It is to be then explained to the friends that all internal therapeutic measures are to be rejected as inadequate to deal with the condition of the incarcerated segment of the bowel. As soon as the diagnosis is positive, laparotomy should be performed, because this form of treatment alone can be relied upon to reestablish normal conditions.

Disinvagination is always accomplished by gradually crowding the invaginatium from the tip through the entire sheath of the invaginans, using the thumb and index finger of both hands. After the invaginated bowel-segment has been reduced, bit by bit, through these manipulations, cautious traction may be employed for the purpose of determining that the surfaces of intussusceptum and intussusciens slip smoothly by each other. It is a serious mistake, however, to attempt the reduction of the invagination only by means of traction, because the mechanical conditions of the intussusception are not recognized in this manipulation. The outcome of a given case depends not alone upon the duration of the intussusception, but also upon the degree of the obstruction of the mesenteric circulation.

Opiates should never be given; nor on the contrary, should physic. But the lower bowel should be washed out repeatedly with warm water to which has been added a little soap and glycerin. Then the anesthetic is administered. If the diagnosis is then sure operation should be urged; if refused it is far better to withdraw from the case.

IODINE: COLORLESS

When patients object to the discoloration of skin produced by painting with tincture of iodine, as in the treat-

ment of goiter, it is very easy to make colorless iodine, and make it instantly, without waiting a minute for the change:

Tincture of iodine.....	24.0	(drs. 7)
Aqua ammonia	6.0	(drs. 1,1-2)
Carbolic acid	6.0	(drs. 10 to 12)

Shake well and wait just a moment and all color will be gone. The therapeutic value is not seriously affected. It is of much value as a local application in several surgical conditions—notably in goiter; but care must be used not to cause blistering.

ODOFORM

Absorption.—Many surgeons use iodoform as a powder for its drying and antiseptic properties as well as for injection of tuberculous cavities (joints, etc.). Some patients, notably those of pink skin and red hair, are easily poisoned, both locally and systemically. The local manifestation is a deep erythema, and sometimes the formation of vesicles. The symptoms of absorption are (1) thick coat upon the tongue with metallic taste; (2) slight nausea with loss of appetite and, later, in extreme cases, vomiting and diarrhea; (3) increase of pulse to 120 or 140 per minute, with irregularity and palpitation in severe poisoning; (4) delirium with hallucinations or melancholia. As these symptoms are much like those of staphylococcus infection, great uneasiness may be felt upon their appearance, but discontinuance of the iodoform application or withdrawal of the iodoform-gauze pack from the vagina (after vaginal hysterectomy), from the abdomen (after appendectomy or pelvic operations) or other wound will generally be followed by prompt disappearance of the symptoms; but rarely they persist for days or weeks and fatal results have been reported. Gram doses of sodium bicarbonate are recommended as an antidote.

Iodoform Injections into Joints.—There can be no doubt but that most brilliant results are obtainable in some cases of tuberculous arthritis and synovitis by injection of 10-percent iodoform emulsion. But, on the other hand, most deplorable results have followed its use by incompetent or careless surgeons as well as physicians. It must be borne in mind that iodoform powder itself is not sterile nor is it germicidal; most pyogenic microorganisms thrive in an emulsion of iodoform, and the glycerin, too, is apt to be infected. So the iodoform must be sterilized by soaking in 1 in 1000 bichloride solution for 24 hours, then placed upon a sterile plate and the water evaporated. The glycerin is boiled and poured into a mortar which, with its pestle, has just been taken from the boiler or sterilizer. Then the iodoform is added and the whole thoroughly triturated and poured into a wide-mouthed, sterilized bottle. From this the iodoform emulsion is drawn out by the freshly boiled syringe (the glass stopper being instantly returned to the iodoform-container) and injection made by a sterile needle thrust through the properly cleaned skin.

Iodoform Wax-Filling.—When large amounts of bone are necessarily removed (for necrosis, tuberculosis, etc.) the cavity may be filled by

Iodoform powder	60.0
Spermaceti	20.0
Oil of sesame	20.0

Mix in a mortar just out of a sterilizer and put into a sterile (boiled) jar. This remains fluid at 132°F. The cavity in the bone must be perfectly clean and dry, and every part of the cavity must be permeated by the mass; drainage usually is not necessary, but if thought advisable, can be made by the insertion of a few strands of plain catgut. While this filling is for temporary use only, being pushed out by the growth of new tissue, the wound sometimes heals by first intention and the filling is absorbed

in time. Though a foreign substance, it is well borne by the tissues; pulse and temperature sometimes increase, but usually for only two or three days. Symptoms of iodoform poisoning are rare. This method gives its best results in cases of chronic circumscribed osteomyelitis, chronic tuberculous osteomyelitis and the acute form attended by necrosis.

JAUNDICE

Phosphate of Sodium in Jaundice.—It has become a common thing to give phosphate of sodium in gallstone disease as well as in every other condition in which jaundice is a prominent symptom. The fact is that it is useful chiefly in catarrhal jaundice and that its good effects in that trouble are due to its cathartic action and not to any specific influence on the disease. It is quite irritating to some stomachs—far more so than rochelle salt or Abbott's saline laxative, which ought to be used instead of the more disagreeable sodium salt.

JOINTS: ACUTE INFECTIONS OF

The acute infections of the joints are few in number, but of great importance. They have been enumerated by Lovett as (a) acute osteomyelitis of the articular end of one of the long bones, involving the joint secondarily; (b) acute suppurative synovitis, or joint abscess; (c) acute plastic synovitis leading to joint obliteration; (d) acute serous synovitis. Tuberculous and chronic joint diseases are not considered in this classification, being essentially of a chronic character.

Acute Osteomyelitis is an acute suppurative inflammation of bone due to infection of the bone-marrow by pyogenic organisms. The treatment of such cases consists in the earliest possible free drainage of the joint, with careful search for the infected area of bone, which should be

opened, cureted and packed, allowing healing to occur under strict antiseptic precautions, in order to prevent a secondary mixed infection.

Acute Serous Synovitis.—Occurs in connection with general infectious disease. It is often classed under the name of articular rheumatism. It does not differ clinically or pathologically from what is generally regarded as acute articular rheumatism. It may be produced experimentally by the injection of cultures of pyogenic organisms. It cannot as yet, however, be regarded as a specific infectious disease. Evidence rather tends to identify it as “an attenuated pyemia.”

Acute infections of the joints of undoubted bacterial origin occur in two grades of severity in connection with many infections. In many cases the source of infection can not be established, and in such cases it is important to remember that the function of the tonsils and the presence of pyogenic bacteria in the mouth are a ready source of infection. That acute articular rheumatism is an infection seems probable from bacterial and especially from clinical evidence; but this has not as yet been definitely proved.

Acute Suppurative Synovitis, or joint abscess, occurs as a result of various infective organisms and appears in infectious diseases of a wide range, such as cerebro-spinal meningitis, diphtheria, dysentery, erysipelas, epidemic parotitis, glanders, gonorrhea, epidemic influenza, measles, pneumonia, pertussis, puerperal fever, pyemia, septicemia, scarlet-fever, smallpox, tonsillitis, typhus fever, typhoid fever, after the use of sound and catheters, and possibly in malaria. The treatment consists of free drainage of the joint as soon as evidence of suppuration can be established.

Ankylosis of Joints.—Union of the bones forming a joint may be (a) fibrous or (b) bony. The x-ray will determine which is present in case of doubt. It will also

reveal "false" ankylosis which is due to mere rigidity of the surrounding parts.

The treatment of the false or spurious, as well as of the fibrous or ligamentous, consists in forcibly breaking down all adhesions (under chloroform) and the persistent use of passive motion. A stimulating liniment (chloroform liniment is pleasing) may be given.

Bony ankylosis cannot be cured. If the joint be in an awkward position the bone may be broken and allowed to unite in a better one.

Gonorrhea of Joints.—Socalled "gonorrheal rheumatism" is an acute infection of the synovial membrane by the gonococcus; in reality, with the exception of the mild, evanescent cases which are due to toxemia, it is truly a pyemic condition. The gonococcus directly invades the affected tissue, and the foci are located either in the synovial membranes, constituting an arthritis, or they are in the articular ends of the bones, constituting an osteoarthritis. In osteoarthritis the bone focus is always primary, and is never caused by extension of the inflammation from the interior of the joint. Hence, a gonorrheal arthritis remains an arthritis and never involves the bones, no matter how long it exists or what its intensity. Gonorrheal joint disease may be recurrent, but never chronic. The cases which have been called chronic are those in which the initial acute inflammation has left behind bands of adhesion or other structural change in the synovial membrane in arthritis, and bony outgrowths, or anyklosis, in osteoarthritis. These changes, unless treated mechanically, or by operation, are permanent.

The treatment during the acute stage must be on general lines, and must depend upon existing conditions.

The treatment of deformity must be based upon the same principles which govern the treatment of all deformities. Cases that are treated properly during the acute

stage will usually get well without disability. It lies with the general practitioner and the genitourinary surgeon to prevent the serious, often life-long, disability which sometimes follows in the train of a gonorrheal joint infection.

Joint-Inflammation (Arthritis).—Inflammation of a joint may follow an injury, with infection of the joint by germs of pus—even the bacillus of typhoid fever (Eberth's bacillus) and of the grippe (Pfeiffer's bacillus) may cause suppuration in the joints, conspicuously the knee. Such infections (with pyogenic bacteria) alone constitute true arthritis.

But by long usage, and by reason of modern pathologists having failed to give any definite substitute for the name, certain chronic conditions must be classed under the head arthritis. They are the following:

a. Arthritis fungosa.—Tuberculosis of the joints, "scrofula" or "white swelling" of the old writers.

b. Arthritis deformans.—A peculiar affection of the joint known also as arthritis pauperum, chronic rheumatoid arthritis, osteoarthritis, rheumatic gout, nodular rheumatism and arthritis proliferans. It is characterized by an overgrowth of the articular cartilages and synovial membranes with destruction of such parts of the cartilage as are subjected to pressure within the joint, with the consequent deformity. It is most often seen in advanced life but sometimes is met in young persons who have the rheumatic diathesis to a marked degree.

c. Arthritis urtica.—Changes in the joints due to gout. The calcareous, gouty deposits or concretions around a joint frequently create quite a deformity, but can be remedied only rarely, e. g., by blistering with cantharides. They are called arthritoliths.

These various conditions are of surgical interest chiefly from the standpoint of differential diagnosis;

but the condition hitherto described as "fungous arthritis" is of enormous import to surgeons, since it embraces tuberculosis of the joints (which see).

Joints: Secondary Impotence of.—As a result of (a) direct injury, (b) prolonged immobilization and (3) the effect upon the mind of the patient, permanent impairment of a joint may follow even a trifling traumatism. Reflex amyotrophy of articular origin also should have a place in surgical pathology, as it explains the pathogenesis of many articular affections, such as passive dislocations, painful flat-foot, genu valgum of adults, scoliosis and others. The functional impotence is sometimes secondary to spinal lesions, which result from the articular trauma and consist of diminution of motor-cells in the anterior horns. Later, the nerves to the joints undergo partial degeneration and muscle-fibres atrophy. Trophic centers which preside over the nutrition of periarticular tissues are probably involved also. Reaction to electric currents serves to establish prognosis. Early cases are usually curable, chronic, incurable. In the incurable patients, static electricity will relieve pain and spasm, faradization being contraindicated.

Plastic, or Ankylosing Synovitis.—In this an acute or severe joint inflammation is followed by a partial or complete obliteration of the joint, without suppuration; it is most familiar as an accompaniment of gonorrhea. Little can be said, however, of its etiology and no satisfactory treatment has been formulated.

Tuberculosis of Joints.—It may begin in either the synovial membrane or the bony structures contiguous to the joint. Immobilization and perfect rest sometimes effect a cure. When recognized early (it is too often mistaken for rheumatism) injection of the affected joint with 10-percent iodoform emulsion will quite often cure. The iodoform must be fresh; the glycerin steril-

ized by boiling. The glass mortar and pestle are boiled twenty minutes. Then one part iodoform (say, one ounce) is triturated in 10 parts of the glycerin and the emulsion poured into a sterilized bottle and kept tightly corked; or better, put in a fruit-jar which can be closed perfectly. At the time of the injection the skin is to be sterilized and the syringe boiled. About one ounce of the emulsion (well shaken) may be thrown into a large joint like the ankle or elbow. Some fever may result, during which the joint is to be kept quiet. After it subsides, together with the immediate soreness, the joint may be used moderately. The injection may be repeated in three or four weeks and the joint put in plaster-of-paris for three weeks. If the iodoform treatment, and surgical rest do not cure in a few months, operative treatment is usually advisable, except in Pott's disease and sometimes in tuberculosis of the hip-joint.

Internally the treatment is essentially tonic and supportive—practically the same as for any other form of tuberculosis.

KIDNEY

Alkalís for Stone in the Kidney.—Before resorting to operative measures for stone in the kidney it is best to give large doses of potassium citrate for two or three weeks, unless there are evidences of infection by pyogenic bacteria. Patients who complain of much pain in the back, who pass bloody urine, and even those who are discharging small quantities of pus, are not infrequently entirely relieved by this course of treatment. The explanation is that the source of irritation is merely a number of small uric-acid stones; and by elimination of an excess of alkali by the kidney these are slowly dissolved, or at least sufficiently diminished in size to permit their passage down the ureter. Certain it is that under

this line of treatment such small stones are discharged from the bladder in some cases, with perfect relief of all symptoms. If no benefit is derived at the end of three weeks, it may be concluded either that the stone is too large to be affected or that it is not of simple uric-acid formation. The onset of fever or the appearance of much pus in the urine demands early operation.

Displaced Kidney.—Nervous and pelvic symptoms dependent upon wandering kidney are more frequent than many believe. If more kidneys had been anchored and fewer ovaries removed, gynecologists would not have been so severely criticized by neurologists as they have been; and many a suffering invalid would have been cured instead of merely improved (by the rest in bed). Whenever a kidney is found completely below the ribs it is making serious traction on the nerves and vessels, it is causing trouble and should be replaced and sutured. It is almost phenomenal how quickly and permanently many chronic invalids may be restored to perfect health by fixation of a loose kidney which had escaped recognition for perhaps years. Why? Not because the doctor did not know about loosened kidney, but because he had been "too busy" to make careful examination; or had been too deeply interested in "local treatments" of a wholly innocent uterus through a speculum (for dollars?); or too much of a doser to believe in surgical measures. Some become so wholly absorbed in the administration of drugs as to lose sight of the necessity for operative treatment of certain conditions. This is deplorable, but true. Others, knowing, fear to advise operation, as the patients may lose faith in them if they admit there is anything they cannot cure! This is cowardly, but also true.

Kidney Operations: Treatment After.—Three things are prominent after kidney operations, especially nephrectomy: vomiting, pain and drainage. The first

two may be controlled, usually, by hypodermics of hyoscine hydrobromide (gr. 1-100) and morphine (gr. 1-4) every three to six hours, this combination being better than plain morphine which has a tendency to check urine-secretion; and 1-100 grain of digitalin may be added with advantage. Immediately after operation (when the pelvis of the kidney is opened or the kidney removed) the temperature rises to 104°—105° F. in a few hours, but it usually drops to normal as soon as the opposite kidney begins to functionate actively. Should the temperature become subnormal and vomiting persist, acute sepsis is coming on and must be combated earnestly, with particular attention to elimination and to drainage. The bowels must be kept active and perspiration induced (pilocarpine hypodermically and much water by mouth). The wound is best opened up wide, even if it has been partly sutured, washed out and packed with gauze. Hypodermoclysis is of value; also sulphate of strychnine and sparteine hypodermically.

Prolapsed Kidney and Insanity.—Our hospitals for the insane contain thousands of patients (particularly women) who suffer from wandering kidney. Many of these unfortunates, indeed, might have been saved loss of their equilibrium by timely suspension of the loosened kidneys. This must not be construed as a statement that wandering kidney is a cause of insanity, but simply that the irritation resulting from the dragging of the displaced organ is enough to unbalance mentality. This declaration also must not be taken as a mere supposition; it is the result of many years' study. Asylum physicians declare it is not true—because most asylum physicians (chosen by political pull rather than by any fitness for their positions) are not capable of making a diagnosis, save in exceptional cases. It is not improbable that some of these patients might be greatly helped if not entirely cured by correction of this source of nerve-irritation.

Tuberculosis of Kidney.—The old idea that renal tuberculosis is secondary to that of the bladder is now exploded, and its hematogenous origin is very generally recognized. This view, based upon clinical experience, is also supported by the experimental findings of Baumgarten, that tuberculous infection in the genitourinary system follows the flow of the secretions, from the testicles to the prostate and from the kidneys to the bladder. Renal tuberculosis is generally at first unilateral, and in spite of the fact that it may occasionally become latent for longer or shorter periods, its usual course is progressive, and experience has demonstrated that early nephrectomy, before involvement of the bladder occurs, is the best treatment for renal tuberculosis. The existence of tuberculosis elsewhere, if not too far advanced, is not a contra-indication; even bad cases of vesical tuberculosis may improve or recover after operation. Removal of the ureter is rarely necessary.

In the comparatively small but constantly increasing number of patients in whom the diagnosis can be made before much destruction of kidney-tissue or involvement of other organs has taken place, hygiene and climate should have a chance before the kidney is removed. By careful attention to diet, elimination of waste-products by an active colon, outdoor life, tonic treatment and the use of some formalin preparation to sterilize the urine, one may often do away with the necessity for an operation. For the more numerous later cases nephrectomy is always the operation of choice, and should be done in every instance, if the patient can stand it and he has another kidney capable of doing a fair amount of work, whether the disease has passed beyond the limits of the organ to be removed or not, and whether the other kidney be involved or not. But when it is presumed that the other kidney is seriously crippled, it is better to leave the patient

to internal treatment alone; attempts at drainage lead to sepsis too often.

Wandering Kidney.—In abnormally loose kidney the pathological epiphenomena may be: (1) Those due to the kidney; (2) those due to traction upon viscera connected with the kidney;

1. There is a traction upon the renal vessels more on the right than on the left, which results in a nicking constriction, torsion, or even rupture of the intimal coat with thrombosis; a serious congestion (stasis) with enlargement of the organ often follows this interference with the blood-supply. The ureter with this downward displacement is kinked or twisted, hydronephrosis occurring, which is relieved by recumbence; or the acute angle of the insertion of the ureters into the pelvis may become hypertrophied, a valvular formation resulting, giving rise to an intermittent or permanent hydronephrosis. Pelvic congestion, plus infection, is the forerunner of calculi, undermining the kidney substance and kidney, or perinephritic abscess in the majority of cases.

2. The peritoneal and cellular attachments of the kidney to surrounding organs are of the greatest importance. A well-defined dislocated kidney of the right side producing decided traction upon the reflections of the liver, duodenum, and pylorus mechanically interferes with the normal functions of these organs, obstruction of the biliary and pancreatic channels, cholecystitis, cholelithiasis, biliary cirrhosis, pancreatitis, pyloric and gastric ulcer and duodenitis being some of the lesions in this location which are directly traceable to the wandering, misplaced kidney. (Byron Robinson).

Kidneys prolapsed to such a degree that the entire organ may be easily palpated, should, generally, be subjected to operation; those which do not fall far below the rib-margin may be held up fairly well by a straight-front

corset, put on while the patient is in the recumbent position, or by a specially built supporter. It should always be remembered that while wandering kidney is essentially a surgical disease it is often associated with neurasthenia, so that mere fixation does not entirely relieve: iron, arsenic, strychnine and food as well as laxatives are imperatively indicated.

KNEE: INFLUENZA OF

Infection of the knee-joint with the organism of influenza (Pfeiffer's bacillus) is not at all uncommon, in fact it seems to be more frequent than either typhoid or pneumococcus infection of that articulation. A peculiar feature of this form of disease is that long intervals of months or years may lie between the acute attack of influenza and these articular troubles. In a number of cases the influenza never subsides entirely, this chronic influenza (the existence of which is not universally admitted) being shown by the persistence of certain subjective sequelæ of influenza, especially of a neurasthenic character, with a marked tendency to take cold, also chilliness and profuse perspiration on the slightest provocation; also, often, by the persistence of the "strawberry tongue"; and frequently by persisting tenderness along the intercostal nerves.

At the beginning of the joint-trouble the symptoms may be acute (or subacute) and are generally regarded as "rheumatism," but they soon are seen to be chronic. The chief site of complaint is the condyle, with pain like that of osteomyelitis of the epiphyses, frequently followed by a persistent weakness of the knee, with tenderness on pressure of the condyle. The existence of this form of bone-disease has only recently been suspected, most surgeons having formerly regarded this tenderness of the bone as a purely nervous phenomenon. Severe cases with a high fever and much pain are very exceptional,

and practically never end in suppuration, provided they are properly treated by placing the limb at rest. Resection is but rarely required. Thick brownish red pus is sometimes found in a circumscribed intraarticular focus. Bacteria, as a rule, can not be demonstrated.

The treatment of these patients having influenza of the knee should consist in complete rest of the limb, preferably rest in bed, but this will hardly prove feasible in chronic cases. Internally it is best first to prescribe sodium salicylate with antipyrin, which will be found to be successful also in long-standing cases. Quinine is administered in the presence of enlargement of the spleen. Hot-air-baths or Bier's congestion method may prove useful in certain cases, whereas ointments and other remedies for gout and rheumatism will be found to be of no value. The patient should be instructed to guard as carefully as possible against taking cold.

LEUKEMIA

X-Ray Treatment.—Prompt subsidence of the enlargement of the glands found in leukemia may be expected from the careful use of x-radiance. Nor is the diminution limited to those subjected to the direct influence; the glands at a distance from the exposed part will also yield. In application of the ray the spleen and the glands of the neck are the parts placed close to the tube; it is not necessary to ray the bones in the splenomedullary variety of the disease. It is possible that Roentgenization of the liver also might prove beneficial. It is best to eliminate the non-penetrating rays, since these have no effect on deep structures while they irritate or burn the skin. This is accomplished by filtering the rays through diachylon (usually four layers) which readily adheres to the skin and screens the ray in such a way that the irritating action is arrested while the curative rays are uninterrupted. The neck

should be rayed even if the cervical glands are not enlarged.

But the leukemia is simply benefited, not cured, so far as now demonstrable by the Roentgen ray. Even the splenomyelogenous variety improves under its influence. The action seems to be of two kinds: the local influence on the spleen and glands characterized by inflammatory reaction, if treatment is pushed vigorously, and later by the breaking down and disintegration of gland-tissue and the formation of leucotoxin, which either has an inhibitory action on the manufacture of leucocytes by the bone-marrow or destroys the leucocytes already formed. In no case has the splenic tumor disappeared entirely. With a discontinuance of the Roentgen ray, the disease, at varying periods, returns. Acute cases are not benefited at all by treatment. Chronic cases respond more rapidly than subacute cases. The probability is that the ray holds the disease in abeyance but does not cure the patient, and above all, exerts the "suggestive" influence upon a mind ready to grasp any chance of escape from a disease pronounced incurable.

LID ABSCESSSES

Abscesses of the lids do not differ materially from foci of suppuration elsewhere save in their causes and peculiar treatment necessitated by the proximity of the delicate conjunctiva. They occur much more frequently in children than in adults, and are due either to trauma or to some illness of pus-producing germ: grippe, scarlet-fever, etc., the worst being those due to infection with streptococci; when such is the cause, and the child weakens, a gangrenous condition may arise. As soon as noted, hot compresses may be applied, calcium sulphide given internally, and efforts made to strengthen the patient as much as possible: forced feeding and tonic remedies. As soon

as it is seen that pus is sure to form the abscess must be opened by free incision and kept clean by frequent bathing in mild antiseptic solutions like the liquor antisepticus alkalinus of the U. S. P.

LIVER

Abscess of Liver.—In cases of doubt, when symptoms point pretty clearly to the liver, aspiration and exploratory incisions are justifiable, but when the liver itself gives rise to no suspicions, operative measures are not advisable. There are some cases in which the liver is not enlarged, and it is only by exclusion that this organ comes under suspicion. Axisa has found, by observations, that a leucocytosis with a simultaneous alimentary levulosuria, especially if accompanied by a reverse relation between the ammonia and urea in the urine, point to an inflammatory process in the liver, even if the diagnosis is not thus rendered absolutely certain. On repeated examinations, if the blood and urine continue to give these results, the diagnosis is tolerably sure and exploratory abdominal section is to be made. The only treatment is thorough evacuation of every focus of suppuration.

Cirrhosis of the Liver.—While cirrhosis of the liver cannot be cured by surgical means its most distressing and alarming symptom, ascites, may be done away with by the Talma-Morrison operation. In many instances the patient has not only been relieved temporarily but life has been prolonged many years. By stripping the parietal peritoneum from its attachments, over a large area, and suturing the great omentum into the pocket thus formed, a free anastomosis is soon established between the veins of the omentum and those of the belly-wall, with the result that the engorgement of the portal circulation is speedily and permanently relieved, to the great benefit of the patient.

Cirrhosis of the Liver: Iodoform for.—Iodoform (dose 1 decigram to a half gram: 1 grain to 7 grains) has been highly extolled as a remedy for cirrhosis of the liver, especially for the stage of hypertrophy. This may be given three times a day, but its use must be long-continued to effect great improvement. The urine must be carefully watched for hematuria and albuminuria; and instantly discontinued, or the dose reduced to the minimum, on the appearance of either, as death has occurred from too much iodoform, the autopsy showing glomerular nephritis.

LUMBAGO-MYALGIA: MUSCULAR STRAIN

Frequently in a so-called lumbago the trouble is a strain of the muscles of the back and loins and not of neuralgic character at all. The injection of half a gram (8 grains) of antipyrin into the muscles at the most painful spot will give instant and permanent relief; even the injection of pure water does good in some cases. Ironing the back with a hot flat-iron will cure other cases, as will also deep massage of the affected muscles. Following, either a belladonna plaster should be applied, as it cheers the patient's mind and eases his back. If persistent, a blister may be applied. It should always be borne in mind that a great many backaches depend upon an overloaded colon and that a good saline laxative will afford a more prompt relief than any other treatment.

LUNG

Lung Complications after Abdominal Section.—Septic pneumonia may follow any operation for abscess of any part of the abdominal cavity; but the larger proportion of pulmonary complications occur after operations above the umbilicus rather than after those in the lower half of the abdomen. Postoperative pneumonia has an average mortality of 65 percent. In about a quarter of

the cases the pneumonia is due to aspiration from ether-anesthesia. Carcinomatous cachexia affords an unmistakable predisposition to lung complications. Pneumonia is observed rarely after operations on the gall-bladder, while it occurs in about 35 percent of the gastrotomies on account of cancer, and in 6 percent of resection of the stomach. Appendicitis and complicating peritonitis are responsible for most of the cases of pneumonia; aspiration during the anesthesia is the usual cause, a tendency to thrombosis and embolism of the lungs being quite rare.

Surgery of the Lung.—The surgery of the lung is yet in its infancy. Much is to be expected in future, when technic has been perfected. At present surgical treatment is confined practically to bronchiectasis, gangrene and localized abscesses. What has thus far been accomplished? Garre has collected statistics thus: Of 400 cases of lung abscesses, gangrene and bronchiectasis, 300 were reported as “cured” by the pneumotomy. The mortality of the operation was 25 percent. In how many of these cases “cure” was permanent is impossible to say from the literature. Garre’s own experience leads him to believe that in the *acute* cases (gangrene and acute abscesses) one may practically always expect permanent cure. The prognosis is less favorable for gangrene than for abscess. For bronchiectasis the reported percentage of cures he found to be 60 percent; but these “cures” were not always definite. Of 47 cases of lung tuberculosis, surgically treated, 26 showed marked improvement or “stillstand” of the tuberculous process. In actinomycosis the prognosis is decidedly bad, but there are four cases in the literature reported as cured.

LUPUS

Lupus is a chronic disease of the skin (and sometimes mucous membranes), of tuberculous origin, characterized

by the formation in the connective tissue of nodules of granulation-tissue; terminating in ulceration. The most certain remedy is early and complete excision. Next-best is cauterization with the Paquelin cautery—thorough eradication. The Roentgen ray has also given excellent results in this trouble, possibly better than in any other disease. In the treatment of lupus Brooke's formula is much used:

Zinc oxide	8.0 (drs. 2)
Starch	8.0 (drs. 2)
Vaseline.....	16.0 (drs. 4)
Mercury oleate	32.0 (oz. 1)
Salicylic acid.....	1.5 (grs. 20)
Ichthylol	1.5 (gtt. 20)

Oil of lavender to scent.

Umber or Armenian bole may be added in sufficient quantity to make the ointment match the skin and thus be less conspicuous.

LYMPHADENITIS (TUBERCULOUS)

In the management of tuberculous adenitis the internal treatment and the local are rather more important than the operative. Yet no one should persist in internal medication and local applications until burrowing abscesses have formed or the glandular substance has broken down and is about to discharge through the skin; for such treatment would lead to disaster—the formation of indolent, discharging sinuses, with danger of systemic trouble from mixed infection—for as soon as the “cold abscesses” open there is engrafted on the tuberculous soil the staphylococcus, even if not the streptococcus. Hence it is very easy to wait too long, especially as the patient makes but little, if any, complaint. But so long as the tuberculous focus seems limited within the capsule (evidence: non-adherence to surrounding tissues) it is safe to abstain from

surgical interference—often for weeks and sometimes permanently. Non-operative treatment consists of (a) general measures: increase of food, maximum of outdoor life in the sunshine, encouragement of proper elimination by kidneys and bowels (excess of water and saline laxatives, but no physic); (b) the administration of drugs calculated to strengthen: notably iron, arsenic and strychnine, creosote, with small quantities of alcohol just before each meal (sweet wines or whisky with glycerin or syrup just before eating causes a patient to take more food than he does without the alcoholic agent); and (c) local use of either tincture of iodine painted on the affected gland—its absorption aided perhaps by the negative pole of a galvanic battery (50 to 75 milliamperes)—or an ointment of ichthyol in lanolin. Massage, aside from the gentle rubbing in of ointment, must never be permitted; rupture of the capsule of a non-inflamed tuberculous gland is likely to have early phthisis as a result. As soon as the gland softens, or becomes adherent it should be excised. Recurrence is to be anticipated in near-by glands.

LYMPHOSARCOMA VS. HODGKIN'S DISEASE

It is now claimed by some pathologists that lymphosarcoma affecting the glands of the neck is not the same as Hodgkin's disease, though the two names have heretofore been used interchangeably by most authors. Lymphosarcoma, it is said, can be distinguished from true sarcoma on the one hand and from lymphatic leukemia and the lymphosarcomatosis of Sternberg on the other; while the lesions of Hodgkin's disease are of still different character. There are some cases, however, in which it is difficult to differentiate even by microscopic examination, bearing like evidences of leukemia and Hodgkin's. But in any case, any rapidly growing tumors of the lower part of the neck should be removed, the region subjected to vigorous x-ray

treatment as soon as possible, and large doses of arsenic administered internally.

MACEWEN'S CHROMIC CATGUT

The MacEwen method of preparing catgut is: To one ounce of water and glycerin add 12 grains of chromic-acid crystals. Immerse the catgut, carefully washed, in ether for twenty-four hours to remove surplus fat, and then soak for ten days in the chromic solution. For preservation MacEwen uses 5-percent phenol solution, but most surgeons now prefer alcohol, 65 percent.

MALIGNANT PUSTULE

As soon as malignant pustule is recognized the affected area should be treated by use of the Paquelin cautery, drawing a deep gutter around the group of vesicles by successively inserting the fine cautery point deeply into the skin; when the pustule is thus isolated it is opened with a crucial incision. Subsequently it is not necessary to use the cautery. But at a distance of five or ten centimeters from the pustule, one should make a second circle by injecting iodine repeatedly under the skin, using the ordinary tincture of iodine. A few drops are to be injected at each place, using altogether a hypodermic syringe-ful. In severe cases it is necessary to repeat this injection on the following day. If there should be much edema present at the time, free incisions must be made, sufficiently numerous to relieve tension. Compresses of moist sublimate gauze are placed upon the pustule for a dressing. Rarely, when the patient becomes very weak, it is best to give injections of camphorated oil. The results of this mode of treatment are excellent. The edema, which usually is great, either does not appear or quickly subsides; the general condition improves rapidly, and the danger is considerably diminished.

MARTIN'S BANDAGE

The name "Martin's bandage" is used for a long, india-rubber bandage from 6 to 20 feet long which is often employed in the treatment of varicose veins, ulcers of the leg and for chronic effusion in joints. It may also be used as a tourniquet, being rather better than the Esmarch, so much employed.

MASTOIDITIS

Inflammation of the mastoid varies greatly in the indications for treatment, the proper management depending considerably upon the cause. Therefore it is necessary, as Williams points out, to differentiate between forms due to chronic and those arising from acute suppurative conditions of the middle ear, and between acute inflammations of hitherto healthy mastoids and acute exacerbations of chronic disease.

We should operate upon the mastoid: In acute suppurative inflammation of the middle ear, accompanied by symptoms of mastoid involvement, or by head symptoms of any kind which persist for more than two days despite free drainage from the middle ear and proper palliative treatment; when there is an obvious abscess behind the ear as a result of acute mastoid disease; for profuse discharge from the ear persisting in spite of treatment beyond two months after an attack of acute suppurative otitis media; for acute mastoid disease occurring in the course of chronic otorrhea; for chronic suppuration of the middle ear which persists in spite of years of treatment by free drainage, cleanliness and local applications; for cholesteatoma, fistulous openings in the mastoid and facial paralysis occurring in chronic otorrhea. Intracranial complications of ear disease always demand opening into the mastoid as a part of the search for the more serious lesion, provided

that a more complete mastoid operation has not already been performed.

He who would operate under such conditions must have a thorough knowledge and experience in the principles and technic of modern operative surgery, with a very special knowledge of the anatomy of the temporal bone and of all its associated structures. He should have operated previously on the cadaver, and he should have assisted often in mastoid operations upon the living subject.

When symptoms point to infection of the mastoid cells, the ear must be thoroughly cleaned out by washing with hydrogen dioxide, dried and filled with powdered boric acid. Sufficient codeine sulphate should be given to control the pain; alone if there is little rise in temperature—with acetanilid if there be much fever. As soon as fever persists and swelling is noted the cells and antrum must be promptly and thoroughly opened and drained. A persistent elevation of temperature after a radical operation for mastoiditis should lead one to suspect the possibility of a complicating brain abscess. If the fever shows wide fluctuations of temperature a sinus thrombosis is more probably the cause. In either case the services of an experienced general surgeon (not a mere aurist) should be sought and the diseased focus drained.

MOLES: REMOVAL OF

Small moles may readily be removed by the application of a solution of sodium ethylate. A drop of the solution is placed on the blemish, a scab forms, and when the scab drops off, the mole (or even a small nevus) will have disappeared, leaving only a trace of a scar.

Moles and Cancer.—The liability of old warts and moles to take on epitheliomatous degeneration late in life is now so well proven that it is best to remove all such growths whenever a patient is under general anesthesia for

other work, and they should be removed under local anesthesia whenever they show signs of becoming ulcerated or of increasing in size.

MOUTH ULCERS

Persistent ulcers of the mouth, not of syphilitic origin, are best treated by burning with stick silver nitrate, then using a saturated solution of chlorate of potassium containing a little thymol as a mouth-wash. The burning may be repeated every two days; but few treatments will be needed. Ulcers which persist in spite of this treatment are (1) tuberculous, (2) syphilitic, or (3) cancerous, and demand careful investigation; excision of a small piece of involved tissue, under cocaine anesthesia, for examination, is justifiable in suspicious cases.

MUSCLES

Angioma.—According to Seitter angiomata of the muscles have a great tendency to become malignant and to recur after removal. Hence, he advises that the entire muscle must be excised, unless the angioma is distinctly encapsulated. If the growth is very large it may be necessary to remove an entire group of muscles or even amputate the limb.

MYOSITIS

As remedies for muscular inflammation we may enumerate: rest, as secured by mechanical devices, splints, bandages, etc.; local sedatives, such as lead in lotion or ointment, bismuth subnitrate mixed to creamy consistency with water and applied for one or two days; cold or hot water applications; gentle massage with camphor or with mild mercurial ointments to subdue active inflammation and excite the absorption of debris; mild applications of the faradic current, the positive pole, too weak to excite

pain; and iodine in ointment or tincture. Internally our treatment is limited to keeping the bowels clear and clean, restraining the fecal toxin-absorption that reacts so unfavorably on enfeebled tissues, and possibly the use of minute doses of veratrine, which has a specific application to muscular fiber.

Myositis of Abdominal Wall.—In the management of cases presumed to be of internal origin it must be remembered that a purely local inflammation of the abdominal muscles, from trauma, may closely simulate intra-abdominal pathologic conditions; and especially so since vomiting may persist for some hours after reception of the injury, with considerable fever following. Many abdomens have been opened for this condition, and everything within the belly found normal. All that is necessary in these cases is rest, plus early incision under perfect asepsis, if pus forms.

MYXEDEMA: POST-OPERATIVE

Following removal of goiter (or other disease demanding total thyroidectomy) myxedema may appear: of one or other of two different types, the cretinous and the adult myxedematous, according to the age of the patient at which the gland is removed. Most cases occur in the white race; it is found most frequently in cold climates, and is probably more frequent in Europe than in any other continent, Great Britain producing the majority of the cases. Females are more prone to the disease than males.

An important element in the treatment is the maintenance of body-warmth, which is best secured by moving to a warm climate and by the wearing of warm clothes. The bowels must be regulated and a good, nutritious diet provided. Until recently a great many different drugs were advised. But none of them were of especial

value. Various tonics, as iron, quinine, hypophosphites, were tried. Diuretics and diaphoretics were also used. Jaborandi (and pilocarpine) given over a long period of time did in some cases prove of benefit, tending to increase the secretion of the thyroid gland. Glonoin and a host of other remedies were tried. Now Davis says thyroid therapy is the foremost treatment.

The first thing in the administration of thyroid preparation is to determine the most suitable constant daily use of the drug; this can only be done by trial and must be determined for each case. It is best to begin with a small dose (one five-grain tablet, or two grains of the extract) once a day, and gradually increase in frequency and amount until the symptoms begin to subside. This stage of the treatment has to be carried on with great care in all cases in which the disease has lasted for some years, in the aged and in those who show any indication of arterial or cardiac degeneration.

The first effect noticed is the rising of the body temperature to normal. Next there is a gradual or even sudden diminution in the subcutaneous edema, with a consequent loss in the body weight. There is also a restoration of the secretion of the skin, which becomes moist and soft and loses its harsh, dry, roughened character. Very frequently the old skin is desquamated in the form of large flakes until an entirely new epidermis is exposed. The hair begins to grow in the form of a fine, thick crop over the scalp, pubes, and axilla. The menses return to their normal regularity and quantity. The urine is sometimes increased considerably in amount, and the albuminuria and cylindruria disappear. The anemia, however, may not clear up, but may be increased and accompanied by the appearance of a true edema of the feet. Both these, however, usually disappear in a few weeks when the patient regains his normal strength. With the

physical improvement there is a corresponding improvement, *pari passu*, in the mental and nervous symptoms. Danger of myxedema should not deter operation in urgent cases.

NECK: FURUNCULOUS ACNE OF

From the irritation of a collar-button a papular eruption occasionally occurs upon the neck, which if not properly handled soon becomes a furuncle (*staphylococcus abscess*) or even a carbuncle (*streptococcus abscess*). The best agent to employ in all these cases is sulphur. And the best formula is the sulphur wash of Widal:

Precipitated sulphur.....	10.0
Alcohol (90-percent).....	10.0
Distilled water.....	50.0
Rose water	50.0

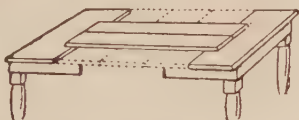
After shaking the bottle, this is to be applied with a piece of absorbent cotton, each night, and in the morning the spot is washed with soap. This is the fundamental treatment of all cases of acne and will cure fifty percent of all the cases. If there is a deep suppuration, the hair of the neck should be epilated with tweezers. If the furuncle enlarges and becomes much indurated, the galvanocautery is useful. If there is ulceration and a fistulous granulating surface, it should be touched with a pencil of silver nitrate.

NOSEBLEED

When the usual methods for the control of epistaxis fail, a little adrenalin solution may be injected by hypodermic syringe beneath the mucous membrane behind the bleeding point. If the injection be made at the proper point, the ingoing arterial current carries the solution directly to the point of leakage, with instant constriction and blanching of the mucous membrane and complete arrest of the hemorrhage.

OPERATION TABLE: IMPROMPTU

Frequently the only available table to use for an operation in a private house is the extension dining-table. This is entirely too broad, and very clumsy. In such a case a most excellent table may be made by opening the table full length, taking two of the leaves and placing them lengthwise of the table, thus making a narrow strip



upon which the patient may lie, and at which it is easy for the surgeon and his assistant to work, as they stand in the openings on either side. Blankets and rubber sheet are to be strapped to the narrow section, thus making a comfortable bed. The three parts of the table are then covered with separate sterilized sheets and the Kelly pad placed at field of operation.

OPERATION: MANAGEMENT AFTER

Acid Drinks After Operation.—When there has been much loss of blood or when anesthesia has been prolonged there is always great thirst after operation—a thirst which becomes very distressing if fever follows, as it invariably does in infected wounds. The desire for water arises not so much from true thirst as from a harassing dryness of throat and mouth. Much of this may be relieved by frequent mopping of lips and tongue with a cloth wrung from ice-water. If the patient be given all the water desired the stomach will soon become overloaded and troublesome vomiting arise; if not, there will be produced loss of appetite and acute indigestion, and later flatulence and even diarrhea. If lemon juice, lime juice or dilute phosphoric acid be added to the water drank

a far less quantity will be required to satisfy; frequently after a small glass of sour lemonade the patient's irritability will disappear, the restlessness will subside, the pulse-rate will lower and sleep supervene.

Anuria After Operations.—Very rarely there is total suppression of urine immediately after severe operation—the exact cause of which is unknown; if the kidney-secretion is not promptly started up, death is certain to occur within a few hours. As soon as the anuria is noted, one-tenth grain of pilocarpine may be given hypodermically; this will induce almost instantly a profuse perspiration which will eliminate a certain proportion of retained poisons. Then hypodermoclysis must be resorted to, a full quart of hot normal salt solution being thrown into the cellular tissues of the buttocks or breast. If this does not cause urine to flow into the bladder within an hour, intravenous injection of normal salt solution must be made, one liter (or about one quart) being used. In two hours this must be repeated if the first does not suffice.

Backache After Operations.—Patients complain bitterly of backache, particularly after pelvic operation—due in great measure undoubtedly to the ligatures upon the broad ligament and other structures. Martin says there are two other causes: The annoying backache which accompanies and follows the true postoperative pain is vaguely referred to the ether, regarded as a necessary consequence of this, and is accorded little consideration; yet it may constitute the major distress from which patients suffer. It is observed after all forms of severe trauma, and is due either to renal congestion or to prolonged dorsal decubitus. When due to renal congestion the normal saline enemata are particularly serviceable. The decubitus pain is best relieved by change in position. In the vast majority of surgical cases, including those subject to intraabdominal operation, the fixed dorsal posi-

tion is not only unnecessary but probably distinctly harmful. Attention to these points will often save the patient from considerable unnecessary suffering.

Black Vomit After Operations.—The appearance of black vomit after an operation is serious, but particularly is it so in abdominal surgery. A little bile may be thrown up during the vomiting which follows prolonged anesthesia. This should not cause anxiety; but when the ejecta become darker and the vomiting “soft and easy” without much straining, it means oncoming acute sepsis, and usually death, unless prompt and effective treatment is instituted. Three things are necessary: (1) The use of ox-gall and turpentine enema (ox-gall, one dram; turpentine, two drams; soap-suds one pint) thrown high in the sigmoid; (2) the internal administration of half a centigram (gr. 1-12) of calomel every hour—it has a quieting effect on the stomach; and (3) the hypodermic injection of one milligram (gr. 1-67) of eserine salicylate every hour, four doses. If the bowels do not move freely inside of eight hours the calomel must be stopped and a milligram of elaterin given by mouth every hour. Washing out of the stomach with warm water twice a day does much to help arrest the emesis.

Fever After Operations.—Shortly after every serious operation the temperature rises to 99.5° to 100.5° F.; and remains elevated for some hours. It is dependent upon the absorption of the fibrin-ferment of the blood left in the wound, even in spite of drainage perhaps, and need not be regarded seriously. But if the fever continue more than twenty-four hours it should be looked after—it usually means either (1) malaria or (2) staphylococcus or other pus-infection. If a microscopic examination of the blood be made the plasmodium should be revealed whenever malaria is the cause; when a microscope cannot be utilized it is best to administer four 5-grain cap-

sules of quinine—one every four hours until four have been taken. Many patients suffer from “latent malaria” and an accident or operation merely arouses the plasmodium into an activity which is recognizable.

Glonoin After Operations.—When there has been great shock from operation and the patient seems about to die from syncope, one one-hundredth grain of glonoin (nitroglycerin, trinitrin) may be given hypodermically. It promptly dilates the cerebral capillaries, and if the shock be purely of nervous origin—i. e. not due to loss of blood—a favorable change should be noted very soon. If not, a second dose may be given in ten minutes; but a third must not be injected. If no hypodermic needle is at hand the glonoin tablet may be put under the tongue, whence it is absorbed with surprising rapidity.

Hiccough After Operation.—Occasionally a persistent hiccough occurs some hours after severe injury or serious operation and becomes quite distressing to the patient. Possibly the best thing to control it, after application to the throat of cloths wrung out of ice-water has failed, is “Hoffmann’s anodyne,” the spiritus ætheris compositus of the U. S. P. It is composed of ether, alcohol and heavy oil of wine—hence a stimulant of almost instant action, yet prolonged as well; the ether is taken up immediately, the alcohol somewhat later, and the oil of wine quite a time afterward. The dose is one to two teaspoonfuls every hour until relieved. Sometimes a capsule of camphor with musk arrests hiccough which has resisted all other medication; but genuine musk is very hard to obtain at present.

Intestinal Indigestion After Operation.—Following certain abdominal operations (particularly those in which there is prolonged drainage of the gall-bladder with external discharge of large quantities of bile) intestinal indigestion is something very distressing and persistent.

In such cases prompt relief may be afforded usually by ordering a pill or granule of bilein and pancreatin with strychnine and the intestinal antiferments, such as

Bilein	0.01	(gr. 1-6)
Strychnine arsenate.....	0.0005	(gr. 1-134)
Pancreatin	0.06	(gr. 1)
Sodium sulphocarbolate	0.2	(grs. 3)
Sodium carbonate	0.2	(grs. 3)

Mix. One, two or three may be given one hour after each meal. In a day or two there will be marked diminution of intestinal distress, with almost perfect relief as soon as the excess of fermentation can be arrested.

Keeping Patients on their Back.—Most surgeons insist upon patients lying upon their backs for many days after a severe operation, patients who would strangle, choke, snort and become blue in the face if they were to sleep upon their backs in health. It is unnecessary cruelty in most cases. If in an abdominal section the blood-vessels have been properly tied, the patient may usually be permitted to lie upon the side the second night; indeed, in appendicitis it is advisable that the patient lie upon the right side instead of the back; for if drainage has been a necessity, this position will facilitate drainage, and if not, the position permits the cecum to drop into its normal position most readily. In most other operations the position which is most comfortable to the patient is usually the best for ultimate results.

Ox-Gall Enema.—This excellent injection, so often used after abdominal section, is made thus:

Inspissated ox-gall	ozs. 2
Glycerin	oz. 1
Warm water	ozs. 5

To this may be added, when there is need for early escape of gas, one-half ounce of oil of turpentine. It is to be thrown well up into the sigmoid when possible.

Phlebitis Following Operation.—Just why thrombosis of the femoral vein should follow an abdominal section has not yet been made clear by pathologists; yet phlebitis is not at all infrequent after the abdomen has been opened for even non-infective conditions like fibroid tumor. Strange to say, the left thigh is most often involved even though the operative work is limited to the right side of the pelvis, as in appendicitis. On the fifth to eleventh day the patient complains of pain in Scarpa's triangle, the thigh begins to swell and great tenderness of the entire thigh as well as of the calf quickly follows. The temperature rises to 100° or 101°F. and the patient is very uncomfortable and restless. Within thirty-six hours the picture of "milk-leg," or phlegmasia alba dolens of the old writers, is complete. The trouble lasts for about two weeks, under favorable conditions, but may go on to suppuration and general sepsis in the worst cases. Bandaging and other forms of compression must be avoided, although they afford comfort, because they may cause detachment of the clot with fatal pulmonary embolism. It is best to apply heat by means of the hot water-bag, or by flannels wrung from very hot water and covered with oiled silk. Some of the kaolin and glycerin compounds with thymol spread on cloth and covered with rubber tissue afford relief and make the patient feel that something is being done for him—a matter of great importance because subjects of this disease become very discouraged. The cataplasma kaolini of the U. S. P. is excellent:

Kaolin.....	577.0
Boric acid.....	45.0
Thymol	0.5
Oil of wintergreen.....	2.0
Oil of peppermint.....	0.5
Glycerin	375.0

Internally three grains of quinine, two of acetanilid and one-eighth of sulphate of codeine may be given every three hours, for the first day; after that small doses of aconitine or of veratrine are of benefit, with a sufficient quantity of codeine sulphate to relieve suffering. The bowels must be kept loose with citrate of magnesia or saline laxative. During convalescence small doses of iron and arsenic are of value, with port or sherry wine.

Pulmonary Embolism Following Operation.—According to Dearborn, who has reviewed the work of twenty-five surgeons, thrombosis and embolism are more common after operations in the pelvis than after operations in any other part of the body. In a resumé of 7,130 gynecologic operations Schenck reports forty-eight cases of thrombosis. Krusen has recently reported five cases, four of which ended fatally, occurring in twelve years of his gynecologic practice. The symptoms in all these cases, as nearly as could be observed, were very similar. The attack was characterized by precordial distress, severe pain and dyspnea, associated with quickened pulse: the patient has an extremely anxious expression, gasps for breath with the aid of all the auxilliary respiratory muscles, the face becomes cyanosed; cold, clammy sweat occurs; the mind remains clear, as a rule, and death occurs in a few minutes, in spite of energetic stimulation.

To Increase the Appetite After Operation.—Very frequently after operations patients complain that they have no appetite, due probably in great part to enforced inactivity. When such complaints becomes annoying an enormous appetite may be produced sometimes by this combination:

Lysol	1.0 (gr. 16)
Ext. gentian,	
Pulv. glycyrrhiz., aa	q. s.
Misce et ft. capsul. xvi.	

Give one capsule before each meal. Burger reports a number of cases of anemia and scrofula in children which he cured with lysol alone, simply through the agency of the ravenous appetite which it excites. But, really, there is nothing much better to excite appetite than the granules of quassin, which should be given in solution or dissolved in the mouth.

Vomiting After Operation.—To check persistent vomiting, and to secure sleep the first night after operation, two and a half grams (forty grains) each of bromide of potassium and chloral hydrate may be given in clyster, not more than four ounces of water being used. Almost instant comfort and quiet follows the few minutes of local irritation.

OPERATIONS: PREPARATION FOR

Colonic Flushing Before Operation.—When preparing a patient for operation for cholecystitis or for gallstones, if there be marked jaundice of long standing, it is well to wash out the colon every day for a week or more, using about a half gallon of normal salt solution injected slowly through a long rectal tube. At the same time the patient should be encouraged to drink much water.

Covering the Wound.—As much as possible of every cut surface should be protected by covering with gauze or boiled towel; and just as little handling of the wound should be done as is consistent with good work.

Maintenance of Hand-Cleanness.—For every prolonged operation there should be upon a convenient chair or table a large bowl of sterile water in which the hands may be frequently dipped.

If during the operation the hands accidentally come in contact with the table, the patient's clothing, the pad, the assistant's face or clothes, they must at once be washed for a moment in the alcohol and then in the sublimate.

If the operator sweats freely he should wash several times in the sublimate solution during a tedious operation, as the sweat brings up microorganisms from the depths of the skin.

Preparing the Skin for Operation.—If time permits, the ideal way to prepare the skin for operation is this: (1) Shave the site of operation and at least six inches in each direction from it; (2) scrub as thoroughly as patient will permit, using a fairly stiff brush with plenty of potash soap (soft soap), if at hand—if not, then any toilet soap; the surgeon or nurse who uses a piece of absorbent cotton for this is not to be trusted, but a piece of gauze may be substituted for a brush if the latter is not obtainable; (3) apply a soap-poultice for eight or ten hours; (4) gently scrub with soap and water with a piece of gauze; (5) dry the surface and wash one minute with common ether; (6) wash two minutes with alcohol; (7) cover with a large pad of bichloride gauze and bandage. At time of operation a little more ether followed by alcohol should be used especially if the patient has sweated, and just before cutting the surface may be rinsed with sublimate solution 1 in 2000.

When there is not time for this elaborate preparation the following steps are to be taken—better after the patient is asleep: (a) Scrub five minutes with a good brush and soft soap with very hot water, depressions like the navel to have special attention; (b) dry with a clean towel; (c) wash with ether, or with oil of turpentine if ether is not at hand; (d) if turpentine is used the surface must be scrubbed again with soap and water, if not, 65-percent alcohol is to be used for two minutes, with particular care directed to the proposed line of incision; (e) wash for two minutes with 1 in 2000 bichloride solution or 1 in 20 carbolic acid, using a piece of gauze repeatedly saturated with the solution. Finally surround the field of operation by towels

just out of the sterilizer or boiler and not touched by anybody save surgeon or assistant.

Preparation Before Scrubbing.—Before the hands are sterilized everything should be placed as desired for operation: the tables for instruments and dressings, the operation-table where the best light is obtainable, the solutions made for hands and patient, the Kelly-pad and slop-jar put in proper position, and cotton, bandages, safety-pins, etc., all arranged where they can be readily reached; for after the hands are properly cleansed nothing not sterile should be touched if avoidable, since contamination of hands means repeated washings and delay.

Preparation of Hands.—First and foremost thorough scrubbing is most important. Few doctors realize the importance of perfect hand-cleanness; fewer still take the trouble to do the work as it should be done. Indeed the chief danger of inexperienced operators is dirty finger-nails.

Immersion.—Without drying them the hands are next thoroughly immersed in the antiseptic solutions to be used.

If the permanganate-oxalic method is to be adopted the hands and arms are washed in the saturated solution of permanganate of potassium until they are stained a very deep-brown color; then they are decolorized by washing in a strong solution of oxalic acid; next they are immersed in 65-percent alcohol for not less than two minutes—not mere “washing” but putting fingers and hands in the solution which must cover them—at the last washing the forearms with the alcohol; and finally washing and soaking not less than three minutes in sublimate solution: 1 in 2000.

Scrubbing.—With a stiff brush, good soap (liquid ethereal or potash soap is best, but any soap except “laun-

dry" will do) the hands and fingers must be scrubbed five minutes, by the clock. This seems a long time; the average doctor of both country and city unless requested to wash again and again, will scrub less than two minutes and think he is clean! At the end of five minutes the hands must be dried carefully upon a clean, but not necessarily "sterile", towel. It is common for doctors outside of hospitals to call any freshly washed and ironed towel "sterile." After the hands are dry the finger-nails should be *cut to the quick*; and then the fuzzy, dirty, tender skin under the nail just at the point of junction with nail carefully cut away with a sharp blade; this is the neglected, infection-carrying part of the hands, the careless attention to which is yearly causing more deaths than all the armies of the earth!

When the nails have been properly cut and the fingertips attended to, the soap, brush and hot water are again used. If hot water can be used while running, it is best to continue washing under the spigot; if not, fresh hot water must be used in the bowl. Scrubbing must now be continued for not less than five minutes, by the clock again, particular attention being paid to the ends of the fingers, to the spaces at the root of the nails, to the palms of the hands and to the spaces between the fingers. Especial care must be exercised to scrub the right hand as much as the left.

Not one physician in a thousand prepares his hands properly when getting ready to assist in an operation or to do major work himself in emergency; not fifty percent of the men engaged chiefly in operative surgery are as careful as they should be in their attention to their own as well as their assistants' hands. Entirely too many men who claim to be surgeons content themselves with three or four minutes devoted to preparation of the hands. *The man who occupies less than twenty minutes in*

efforts to secure hand-sterilization in a capital operation (not emergency) should be deemed guilty of manslaughter if the patient previously non-infected should die of sepsis. And this is not the wild statement of a "crank" but the declaration of a surgeon who in a quarter-century's work has seen entirely too many lives sacrificed by the criminal carelessness of ignorant or thoughtless so-called surgeons or assistants.

Purgation Before Operation.—Before every serious operation the bowels should be moved freely if possible. Notably this is desirable in abdominal and pelvic surgery where the intestines should be free from feces and gas—slipping under the fingers like ribbons. To produce this result compound licorice powder is commonly used, about 2 grams (30 grains) being a laxative and twice that quantity for free catharsis. It should be given at night, with an enema in the morning. If operation is to be made late in the day, epsom salt, rochelle salt or Abbott's "saline laxative" may be taken early in the morning of the day of operation. Care must be taken not to give so much physic to a weakened patient as to cause exhaustion, with possible death from shock.

Solutions.—When a minor operation is to be performed careful scrubbing of the hands and immersion in sublimate solution is all that is required, unless the hands have been recently in pus. When a major operation is to be made, potassium permanganate and oxalic-acid solutions must be employed if pus cases have been handled within two or three days. If not, alcohol and sublimate may be relied upon alone, if the work is not to be of very great length.

a. Permanganate Solution.—Into one bowl holding at least half a gallon of boiled water a handful of permanganate of potassium is thrown—as much as will dissolve and leave a little on the bottom.

b. Oxalic Solution.—In a similar bowl in a quart or more of water a like amount of oxalic acid is dissolved.

c. Alcohol.—A third bowl should contain 8 ounces of pure alcohol with four ounces of boiled water added.

d. Sublimate.—Enough tablets of bichloride of mercury should be dissolved in two quarts of water to make a solution of the strength of 1 in 2000. A porcelain bowl must be used. It should be wide enough to admit the hands with perfect freedom so that the unsterilized edges will not be constantly hit by the hands.

e. Water.—Each of the two last-mentioned bowls must have been thoroughly scrubbed out and carefully scalded in boiling water (or better, boiled in a large kettle or wash-boiler) and not handled by anyone except the operator before using.

In a private house somebody must stand by these solutions (particularly the alcohol) to keep flies from alighting upon and contaminating them—a matter of greatest import. One fly may upset hours of work, and kill a patient if unnoticed.

Substitutes.—If the hands have not been in pus lately the permanganate and oxalic-acid solutions may be omitted. In such case, after the hands have been well scrubbed and the nails attended to, turpentine may be poured upon them and rubbed into the skin and around the nails for at least two minutes; then scrubbing with soap and hot water proceeded with, and the alcohol and sublimate solution employed.

If alcohol cannot be obtained, tincture of camphor (used in so many houses) may be used, though not very good.

Rubber Gloves.—The same care should be taken in efforts to sterilize the hands when rubber gloves are to be used as they may be pricked or torn at any moment. It is perhaps best that the operator should work with-

out gloves, but it is desirable that the assistant shall wear them as most operation-infection comes from the fingers.

OPSONIC TREATMENT IN SURGERY

Just what will be the ultimate results of the application of Wright's theory of the opsonins to surgical practice cannot be foretold; but Ohlmacher, of Detroit, gives his own experience with the use of bacterial vaccines, preferably autogenous, in various surgical conditions. While not neglecting to take the opsonic index when practicable, he was compelled to rely largely on the clinical manifestations as a guide to the repetition and size of dose, always endeavoring, of course, to give the injections at the right time, when the positive phase is beginning to fall, and not in the negative phase.

As Wright points out, the great cause of failure in previous tuberculin treatment of tuberculosis was the giving of too large injections and too frequent repetition of the dose, causing a marked negative phase and keeping it up. Ohlmacher thinks that his results might have been better than they were had he been able to make more systematic opsonic determinations, which often show a fall of resistance before the symptoms indicate it. He has had remarkable success in various types of staphylococcus infections, obstinate cases of acne and furunculosis, impetigo, palmar abscess, and in a very distressing case of what has been called psoriasis, but which he thinks was an extraordinary case of staphylococcic dermatitis, and which yielded rapidly to opsonic treatment with an autogenic culture of staphylococcus aureus. He had also very satisfactory results with a case of very annoying bladder infection from the colon-bacillus, similarly treated after other treatment had failed.

A very striking case was one of sacculated pneumococcus empyema, in which perfect recovery occurred in seven

days after two injections following a small puncture. Ohlmacher believes that even the generally condemned method of aspiration would have been sufficient in this case when reinforced by opsonic therapy. Owing to delay in obtaining Koch's tuberculin R., the standard vaccine for tuberculous cases, his experience with tuberculosis has as yet been limited, but he has been able to obtain a strain of gonococcus culture with which he has had striking success in the treatment of gonorrhea and its complications, including gonorrheal rheumatism and conjunctivitis. From what he has already seen, he is prepared to say that, with proper artificial autoinoculation, we can obtain constitutional and local improvement in many subacute and chronic affections entirely beyond anything previously possible in medicine.

OSTEOMALACIA

This disease has been temporarily greatly relieved by ovarian transplantation. But in every case thus far reported there has been a speedy change for the worse.

OSTEOMYELITIS

Inflammation of the bone-marrow is a thing often forgotten by the busy practitioner; a wrong diagnosis is the rule. With young adults particularly the symptoms of general infection may be so prominent as to overshadow the local trouble. Absorption of toxins may so overwhelm the patient that he cannot give any testimony as to the presence of the bone affection, and unless a very careful examination is made the local lesion may be overlooked, especially in parts thickly covered by muscle. A diagnosis of delirium tremens has been made under these conditions, when the subject had been drinking. The treatment consists in locating the point of infection and boring a good-sized hole to it, with injection of 10-percent iodoform

emulsion; and careful antiseptic dressings. Internally opium, quinine and stimulants are indicated.

OZENA TREATED SURGICALLY

Sondermann recommends treatment of ozena by the following surgical measures: A rubber condom is introduced collapsed into the nose. It is then inflated by a connecting tube and bulb, when it fits closely against the walls of the nose, adapting itself to all nooks and crevices. After from five to ten minutes the stopcock is turned and the air allowed to escape from the condom, after which it is easily removed and transferred to a vessel containing water. Many of the crusts stick to it, while those remaining in the nose are loosened and can be readily expelled spontaneously. During the first week the patient repeats this twice a day and later once a day. This procedure is supplemented by cleaning of the nose thoroughly, drying and blowing in aristol or boric acid mixed with a little antipyrin. The disease is now regarded as contagious.

PAGET'S DISEASE

Malignant papillary dermatitis (cancerous eczema of the nipple) may occur both in male and female, though usually in women from irritation of suckling. It is essentially a carcinoma of slow development; and if it does not yield promptly to the x-ray, amputation of the breast should be insisted upon.

PAIN

Chloro-Phenol for Pain.—When chloral hydrate and phenol in equal parts are rubbed together there is formed a syrupy liquid which is strongly antiseptic and anodyne when used locally. For the pain of inflammatory troubles it may be gently rubbed in or applied on flannel. It is especially effective in the control of certain neuralgic pains, notably pleurodynia.

Painful Heel.—Some patients complain of pain in the heel, most prominent for a little while after getting out of bed. It is often one of the sequels of gonorrheal infection. It may also be due to a calcaneobursitis of traumatic as well as gonococcic origin. In others still there may be a small exostosis of the calcaneum, which also is most frequently due to a gonorrheal infection, possibly of many years before. Also it may be due to simple “weak foot” in very heavy patients, in which case either strapping or use of a brace to the arch of the foot will relieve. But in most instances the “two-glass test” will show “clap-threads” in the urine; and persistent treatment for the hitherto unsuspected chronic gonorrhea will cure the painful heel and other symptoms usually attributed to “rheumatism” or “gout.” And for the internal treatment of gonorrheal “rheumatism” it is a good thing to know that calcium sulphide is often quickly curative.

Post-Operative Pain.—The temptation to use morphine to allay the pain following serious operation should not be yielded to save in extreme cases; morphine locks up the secretions and obscures symptoms which may be of importance. For the ordinary pain one grain of phosphate of codeine may be given hypodermically and repeated every four hours as long as may be necessary—it does not give rise to “habit” as does morphine. For pelvic pain two grams (30 grains) of antipyrin may be given with good effect—dissolved in four ounces of starch water and thrown into the rectum. If morphine must be given it is least objectionable in the “anesthetic tablet”: morphine, gr. 1-4; hyoscine hydrobromide, gr. 1-100; and cactin, gr. 1-67; used hypodermically, to be repeated in four to six hours if needed.

PANCREATITIS

Acute inflammation of the pancreas sometimes demands surgical intervention, though generally fatal even when

operated upon. The pains are usually localized at the epigastrium, but when gallstones are present, may also be situated in the region of the gall-bladder or in the ileocecal quadrant of the belly. The attack may be ushered in with an acute seizure of bilious vomiting, quickly subsiding, unlike the vomiting of appendicitis and gallstone colic. The tongue is dry and parched, though there may be but a trifling amount of fever. Obstinate refusal of the bowels to move is a prominent symptom, though there is but moderate distension from flatus. A peculiar feature is that, when the abdominal wall is thin, the omentum may be felt bunched up at two or three points.

The presence of this condition without any signs pointing directly to other intraabdominal pathological disturbance should arouse suspicion of pancreatitis. In case of doubt it is better to give the patient the benefit of an exploratory section, especially if there be a trace of sugar in the urine. It is essential to remember that the amount of hemorrhagic effusion which escapes into the abdominal cavity in some cases and the extent of the fat tissue-necrosis are not responsible for the fatal outcome. Death is evidently due to absorption of poisons from the diseased pancreas, and the tension in the retroperitoneal tissue around the pancreas evidently promotes absorption. This fact must be borne in mind in operating, and provision must be made for reducing the tension and for improving the condition of the circulation through the gland. By this means it may be possible to check the poisoning of the organism from the decomposing gland by exposing and draining it directly. It is also possible that immunization with trypsin may prove effectual in acute pancreatitis.

PARALYSIS: POST-OPERATIVE

Following an operation of more than an hour's duration there may be temporary paralysis of one arm. Some authors

have attributed this to the deleterious effect of chloroform; but it occurs after ether narcosis and also as a postoperative accident in anesthesia produced by the hyoscine-morphine-cactin combination. It is due entirely to the position of the arm; by reason of the entire weight of the arm (and occasionally a considerable part of the thorax) being thrown across the sharp edge of the operation-table, pressure-paralysis is induced, just as one's foot "goes to sleep" when the thigh hangs over the rail of a chair. It lasts from a few hours to as much as two or three weeks. If the patient becomes anxious about it, massage may be ordered or the faradic current may be applied (not because it possesses any value but that the patient may *feel* that something is being done). In persistent cases the galvanic current may be used with intramuscular injections of one-thirtieth grain of sulphate of strychnine once daily.

PERICARDITIS

Pericarditis becomes a surgical disease when the effusion becomes so great that there is serious interference with the heart's action, and when the serum becomes infected by pyogenic bacteria. Before making an attempt to remove the effusion the patient should be given a big drink of whisky, and a quarter grain of morphine with 1-100 grain hyoscine hypodermically. The skin must be as thoroughly cleaned as for the most serious operation and the needle must be taken directly from the boiler. Five minutes before operation a little of a 2-percent solution of cocaine should be injected beneath the skin and into the muscle. In aspirating, the needle may be introduced through the eighth intercostal space; or if the diaphragm be displaced downward strongly the puncture may be made just to the left of the ensiform. On account of the danger of wounding the heart as the pericardium contracts it is better to use a small trocar and canula rather than a sharp needle.

The fluid should be permitted to escape very slowly. When the pericardium is full of pus, excision of rib, free incision and drainage offer the only escape from death by sepsis.

PERIOSTITIS: CHRONIC

Chronic thickening of the periosteum positively known to be non-syphilitic in origin will often yield to small doses of potassium iodide, one gram (fifteen grains) three times a day. It is best given in compound syrup of trifolium or simple elixir.

PERITONITIS

Acute peritonitis is always due to direct infection with pyogenic microorganisms, as from a leaking appendix, a perforated gall-bladder or other viscus, a ruptured pustule, etc. The disease can be cured, then, by immediate removal of the cause, with drainage. The following points are of importance: (1) Acute general peritonitis can be cured by operative means, provided it is recognized early. (2) Early recognition is aided by a knowledge of the etiology of the disease, and accurate observation of the patient's symptoms, local and general. (3) On examination of the patient the most important early signs of peritonitis are localized pain, becoming general, muscular rigidity, rapid and increasing pulse-rate, and rising temperature. (4) Early diagnosis should be followed by prompt operative treatment, as this offers in most cases the only chance for recovery. To relieve pain, until operation can be done, phosphate of codeine may be given, hypodermically, as often as needed, in half-grain doses.

For Pain of Peritonitis.—To control the pain of the adhesive peritonitis, which often saves the patient's life in appendicitis, as well as that of the postoperative form, aconitine is of much value. Opium in every form does harm, though sometimes a grain of phosphate of codeine

has to be given; but little will be needed if a half milligram of aconitine every hour be given until the pulse is soft and the fever lowered.

Tuberculous Peritonitis.—Concerning this condition it may be said: (1) The exciting cause of tuberculous peritonitis is the bacillus tuberculosis. (2) This disease occurs most frequently between the ages of twenty and forty, and, according to clinical experience at least, is more common in females than in males. (3) It is, in the great majority of cases, secondary to a tuberculous focus in some other part of the body, most frequently the lungs. (4) There seems to be no doubt that infection through the fallopian tubes may occur, but its frequency is disputed. (5) The onset of the disease is usually slow and insidious and its clinical course presents few definite or characteristic symptoms. (6) The diagnosis is generally difficult, and is often not made until operation or autopsy. (7) The prognosis in the ascitic form of the disease is comparatively good, if treated by abdominal section, and in the non-exudative variety bad. In any form it is of course correspondingly modified by the existence of tuberculous disease in other parts of the body. (8) The treatment in most cases should be operative, consisting in laparotomy, with removal of the fallopian tubes when practicable. (9) No satisfactory explanation has as yet been offered as to the reason for the cure which so often follows operative treatment in this disease. (10) Very soon after the abdominal section a general antituberculosis treatment should be adopted with special attention to proper diet and out-door life.

We have been taught to believe that simple abdominal section with considerable manipulation of the viscera and evacuation of the ascitic fluid will cure tuberculous peritonitis. But while it is true that certain patients have apparently been cured by such mild procedures, a much

larger number have gone on to fatal termination. The mistake has been made of treating a symptom (ascites) instead of the disease. Radical removal of every local deposit of tubercle wherever found is the only certain cure. In a small percentage of cases it cannot be found; here the only resource is irrigation, manipulation and closure. In a larger percentage of cases the lesions are so numerous or so situated that they cannot be removed; here gentle rubbing of the affected surfaces with gauze may do good. In all cases, whether the local focus be removed or not, the most energetic constitutional treatment must be instituted: forced feeding and tonics do fully as much in abdominal tuberculosis as in pulmonary. But unless the primary seat of the disease is found and the source of trouble removed, a guarded prognosis should be given regardless of how much the patient may gain after operation. Medication is the same as that for any other abdominal section during the first few days, and then the same as for phthisis.

When operation is declined, or is contraindicated, the abdomen may be smeared, twice a day, with this ointment:

Yellow mercuric oxide		1.5 (grs. 20)
Belladonna ointment		32.0 (oz. 1)
Lanolin		32.0 (oz. 1)

This relieves the pain to a remarkable degree, especially with children in whom the skin is sufficiently thin and tender to permit free absorption.

PHLEBITIS

Immobilization of the extremity affected should be the rule for a much longer period than generally advised, especially in thrombosis of the femoral vein. Massage ought not to be begun before one month after the last rise of the temperature; tarsal and metatarsal articulations will be first mobilized, later larger joints. Only gentle massage will

be resorted to and the patient progressively trained to resume the standing position.

PLEURITIS

Pleurisy becomes a surgical disease as soon as it is apparent that the effusion is not being absorbed or that the serum is infected with pyogenic bacteria. When it is decided that the serum accumulated in the pleura is to be evacuated the skin must be scrubbed carefully with soap and water; a few drops of cocaine are then to be injected beneath the skin and into the intercostal muscles, but *not* into the pleura; a large aspirator-needle is boiled for at least ten minutes; the skin is pulled a little upward or downward and from over an intercostal space and the needle thrust quickly and directly into the pleural space. A boiled stilet must be at hand to push through the needle from time to time if it become clogged by flakes of lymph. The fluid must be allowed to escape slowly so that the lung may expand (if adhesions have not formed).

When all has been withdrawn the needle is taken out by a short, quick jerk and the skin allowed to slip over the opening. A little piece of gauze may be placed over the skin-puncture and held in place by a strip of adhesive plaster.

When pus is present the operation of choice for children is the Estlander: removal of a small part of one rib, or even a mere slit in the parietal pleura sometimes effecting a perfect cure if the subsequent dressings be made with sufficient care as to asepsis; for adults the Schede operation (excision of the chest-wall including the parietal pleura, over at least one-third of the entire side affected) is the only one which promises complete cure, since it permits the skin and muscles to fall in on the visceral pleura and so obliterate the huge pus-sac. It is remarkable how much the lung will expand after such a formidable

operation. The most energetic antituberculous and tonic treatment must be kept up for months.

POULTICES

Charcoal Poultices.—Charcoal poultice, like all other poultices, has fallen into disuse on account of the nastiness, other and better agents being employed; but sometimes patients are found who *demand* poultices, and when there is an ugly sloughing (and especially a sloughing old wound or ulcer) the charcoal poultice may be ordered. It possesses the advantage of being a powerful deodorant, and sometimes it does seem to do more good at the beginning of treatment of such ulcers than the modern “antiseptic” applications. It should be made thus: Wood charcoal, pulverized, one-half ounce, divided in two parts; bread-crumbs, two ounces; linseed meal, one ounce and a half; boiling water, ten ounces. The breadcrumbs and linseed meal are macerated for ten minutes with heat to keep the mass just below boiling, and then half of the charcoal is stirred in and one-half ounce of liquid phenol added, care being taken that it be well mixed. The poultice is then spread on a cloth, the remaining half of the charcoal sprinkled on and the mass applied quickly to the sore and covered with a piece of oil-cloth or rubber-tissue.

Soap Poultices in Suppuration.—When there is much pain from a suppurative process, like periostitis, adenitis, abscess or forming whitlow, much comfort may be obtained from application of a soap poultice. Several thicknesses of gauze are saturated with soft soap—the green soap, ethereal soap or potash soap of the U. S. P. is best—and applied to and around the affected area and covered with rubber-tissue or oiled silk, held in place by bandages. Better is a mixture of soap and alcohol:

Green soap	2 parts
Alcohol	1 part

This is to be applied in the same way and should be allowed to remain all night. It is also a good mixture to be used in acute synovitis. It is not a good thing to apply to a wounded or granulating surface as the alkali is too irritating.

PROCTITIS: ACUTE

An acute irritation of the rectum is sometimes followed by a painful condition associated with discharge of mucus. Acute rectal catarrh this state of affairs is called by the older pathologists. Severe tenesmus with mucous diarrhea accompanies it, persisting for several days if left alone. An injection of a solution of chlorate of potassium is best for this:

Potassium chlorate	6.0 (grs. 90)
Water	128.0 (ozs. 4)

This should be slightly warmed and thrown into the rectum. There will be some expulsive efforts at first but the clyster must be retained twenty minutes if possible. It may be used twice a day, but two or three injections usually suffice.

PROSTATECTOMY: INDICATIONS FOR

The question, When should the prostate be removed? is thus answered by John B. Murphy:

1. Prostatic enlargement to a pathological degree.
2. Painful and frequent urination.
3. As a cure for catheter life.
4. As a cure for secondary cystitis.
5. For the relief of pressure on the rectum.
6. Priapism in the aged with perineal irritation.

Goodfellow declares that "there are no contraindications to the operation unless the condition of the patient is such that no operation of any kind is warranted."

PROSTATIC HYPERTROPHY AND STONE

That there is a decided relation between stone in the bladder and hypertrophy of the prostate is the claim of Prof. Reginald Harrison, of London. He says the explanation is this: (1) The enlarged prostate forms a hindrance to the spontaneous exit of small stones of urates or oxalates that are formed in the kidneys in old age. (2) The difficult micturition, and the ammoniacal disintegration of the urine, can lead to cystitis and the formation of phosphatic concretions. (3) Litholapaxy does not accomplish the result desired. Only removal of the prostate at the time the stone is excised will effect a perfect cure. Harrison prefers the suprapubic method, which makes possible the removal of the stones, with prostatectomy.

PROSTATORRHEA: HYOSCYAMINE FOR

Prostatorrhoea with irritable deep urethra may be greatly benefited by the internal use of hyoscyamine. One quarter of a milligram (0.00025, or 1-250 grain) in granule form may be ordered four times a day, either alone or with one centigram (1-6 grain) of concentrated hydrastin. If there be scanty urination much water must be drunk and barosmin (the resinous product of buchu) be taken in doses of one milligram three times a day.

PRURITUS ANI

Nearly all cases of persistent itching of the anus may be traced to one of these causes: (1) The most common is superficial ulceration or abrasions of the anal canal. (2) Next, catarrhal diseases of the rectal mucosa which cause discharge from the anus. (3) External hemorrhoids or skin-tags which prevent proper cleansing of the parts. (4) Small polyps of the anal canal, protruding internal hemorrhoids, prolapse and fissures, etc. The

treatment consists (in addition to removing the cause) in restoring the altered perianal skin to the normal. For this purpose nitrate of silver followed by citrine ointment are the best applications.

Prescriptions for Pruritus Ani.—Cowles recommends the following formulas:

Ungt. hydrargyri ammoniat.. 1.6 (grs. 25)

Adipis benzoinati..... 30.0 (oz. 1)

M. Sig.: Apply locally as directed, or

Hydrargyri chloridi mitis 8.0 (drs. 2)

Sig.: Use locally as a dusting powder as directed.

If there is much thickening of the skin surrounding the anus some preparation of salicylic acid should be used, for example:

Acidi carbolic..... 1. (grs. 15)

Acidi salicylici..... 0.6 (grs. 10)

Ichthyoli 1.6 (min. 25)

Petrolati 30.0 (oz. 1)

M. Sig.: Apply locally as directed.

A hot sitz-bath or the application of hot compresses often confers immediate relief. The following formula is recommended by Morris:

Acidi carbolici 1.5 (grs. 22)

Cocainæ hydrochloridi..... 0.6 (grs. 10)

Petrolati 30. (oz. 1)

M. Fiat unguentum. Sig.: Apply locally as directed.

Caution should be taken not to allow its use long enough to induce the cocaine habit.

PYLORIC STENOSIS: SURGICAL TREATMENT

Socalled idiopathic dyspepsia is comparatively rare; functional dyspepsia and indigestion have their origin quite commonly in a narrowing of the pylorus, which interferes with normal drainage of contents. This narrowing is sometimes congenital, but more often due to cicatricial

contracture following the healing of pyloric ulcer. Of late it is being found that duodenal ulceration is not uncommon—either independent of or associated with pyloric ulcer. Ulceration being the most common of the causes of obstruction from within, so likewise are adhesions the most frequent exciting factor from the outside of the lumen. These may be caused by localized peritonitis, due to gall-bladder infections, pancreatitis, etc. The result upon the stomach of outlet stenosis depends upon its completeness. It is most often the symptom-syndrome of indigestion, and extends over many years' duration, growing ever progressively worse. Putrefaction of stomach-contents and dilation and atony are among the later manifestations. So likewise is a residuum.

The predisposition of ulcer to ultimate cancer-formation—the so-called cancer on an ulcer base—is great. The treatment of this condition is essentially surgical, and is to be summed up in the one word, "drainage." Medicines are of use only as they act as antiseptics on the fermenting, putrifying stomach-contents, and thus control, to a degree, putrefaction and fermentation with consequent gas-formation and stomach-distension. Muscular power of the stomach is insufficient to force a normal food-supply through the narrowed outlet, so muscle excitants and tonics are of no avail. Lavage is superior to medication of any kind. This may be dangerous in the stage of acute ulceration. The best operation is a posterior gastroenterostomy without loop and with suture. There being no loop of jejunum, and the stomach being tapped at its lowest point, there is very little danger of establishment of a "vicious circle," and an enterostomy is unnecessary, and with this latest technic is quite impossible. The two organs, stomach and jejunum, are anastomosed at the point where they normally lie almost in contact. Too strong a plea cannot be made for early rather than late operations.

PYURIA

When the flow of pus is excessive in suppurative pyelitis as well as when excessive amounts of albumin are passed in nephritis, a marked diminution may be produced by arbutin, the glucosidic, active principle of *uva ursi*—a drug for long used in crude forms as a diuretic and tonic to mucous membranes. The dose is from one to five grains every two or three hours.

RECTUM

Cathartics in Prolapsus Recti.—After the rectum has been returned beyond the sphincter the question arises, “what is the best way to move the bowels?” for straining at stool is the cause of the prolapse and may induce its immediate return. Podophyllin in doses of one milligram (gr. 1-67) every hour, six times, will cause very gentle movements without straining. Two or three tablets should be given at bedtime for a week or more.

Examination in Rectal Surgery.—Brickner very aptly says: Don’t fail to make a digital rectal examination in cases of appendicitis and in all ailments when the diagnosis is obscure. Nor should it ever be omitted before an operation upon anal disorders. It may save the embarrassment of a subsequent discovery that a patient’s hemorrhoids, for example, were but an expression of a carcinoma higher up in the rectum.

Local Anesthesia in Rectal Work.—The technic advised by Tuttle consists in anesthetizing the lesser splanchnic nerve of Morestin and the inferior hemorrhoidal nerve by a single puncture of the hypodermic needle back of the posterior anal commissure, and introduction of from 20 to 30 minims of 0.5-percent eucaine or cocaine solution so that the sphincter can be thoroughly stretched. After this is done the hemorrhoids, or other conditions upon which operation is proposed, are anesthetized by the local injec-

tion of small quantities of one-tenth-percent solution of eucaïne, cocaine, stovaine or novocaine. Sometimes it is necessary in very sensitive patients to anesthetize the branch of the pubic nerve which supplies the sphincter at the anterior commissure by the introduction of small quantities of the solution at this point.

Prolapse of the Rectum.—When it is found that protrusion of the rectum is accompanied by a pocket of peritoneum so that excision is highly dangerous, one may resort to ventral fixation of the sigmoid—colopexy, as it has been called. About 75 percent of all cases may thus be cured; and in safe hands there is no mortality. The technic is, briefly, as follows: After proper sterilization of hands, instruments, dressings and field of operation, an incision is made, parallel to and about one inch above Poupart's ligament. The pelvic colon is recognized and drawn up until the prolapsed rectum is reduced and the anus resembles a funnel-like depression. The lowermost portion is chosen as the point of fixation to the abdominal wall. An oval piece of the parietal peritoneum is removed in the iliac fossa and the colon is sutured to the two edges of the peritoneum by 30-day chromicized catgut suture. At the lower portion of the external margin, the superficial muscle-fibers, iliac fascia and the peritoneum are united to the colon, the inner suture attaching the colon along its mesenteric border. The abdominal wound is closed without drainage.

Rectum: Prolapse of.—In Van Buren's method the patient is anesthetized and the smallest tip of a Paquelin cautery (heated only to a dull-red) is drawn over the entire length of the prolapsed gut, just burning through the mucous membrane. Five or six grooves are to be burned, parallel to each other. The mass is then pushed well above the sphincter, and the sphincter burned at two points on opposite sides well into the substance of the

muscle. Finally the rectum is packed with iodoform gauze which is removed on the third or fourth day.

Retro-Rectal Abscess.—An abscess forming behind the rectum is best opened by a semicircular incision between the anus and coccyx. This should be as free as the situation will permit without cutting the sphincter. When evacuated the cavity should be mopped out with absorbent cotton and loosely packed with gauze. This should be removed daily and the wound washed out with some mild antiseptic solution. It is essential that the sphincter ani be thoroughly stretched at the time of operation. Should granulation be slow it may be stimulated by use of iodoform as a dusting powder, or by daily application of balsam of Peru.

Treatment of Non-Malignant Strictures of the Rectum.—When it is found that “chronic diarrhea” or “chronic dysentery” depends upon non-malignant stricture the proper treatment is that outlined best by Kelly: enforced rest, nutritious and non-irritating diet, keeping the upper bowel emptied, cleansing solutions of mild antiseptics, healing applications and packs. A stricture of moderate caliber may be cured by gradual dilation with bougies; by the elastic pressure of a rubber bag, distending by air and made to distend in a uniform manner by a silk covering (Sweeinnam’s plan), and by digital distension and massage. If a contracting bowel is watched and thus treated, the patient may go on for a long time, for years even, in great comfort, though the disease is not cured and patients should be told so.

However, in really bad cases resection is necessary and may be practised even when the disease extends over an area as long as 20 cm. A posterior incision with the removal of the coccyx, and sometimes of the last sacral vertebra, with the preservation of the anal sphincters and ampulla when possible, and an end-to-end anastomosis of the bowel, is the best procedure. It is sometimes worth

while in the attempt to save the bowel, when the local process persists in advancing, to make an artificial anus completely diverting the fecal current. The bowel may then heal and the extensive surrounding inflammation undergo resolution, when after months (or a year or more), and generally after a successful resection, the artificial anus may be closed by abdominal section.

In a high grade of tuberculous or syphilitic stricture, when an extensive area is involved, it is often best to make an artificial anus and extirpate the diseased bowel. Kelly prefers to do this by amputating the bowel above first, and ligating such hemorrhoidal vessels of the lower end as are within reach, and then to complete the extirpation from below by an incision from sacrum to anus. Advanced tuberculosis always demands extirpation, and syphilis calls, of course, for persistent specific treatments in addition to whatever local means may be employed.

What Shall We Do for Cancer of the Rectum?—

This is a question every physician is liable to have to answer, one of great importance to the patient, and one upon which surgeons have not yet agreed. From my own work I am satisfied as to the justifiability of operating in every case that is not so far advanced as to be regarded upon the brink of the grave. There can be no question that if recognized early and properly removed, carcinoma of the rectum can be *cured*. The method of extirpation is a matter of selection, to accord with the surgeon's predilection and the nature and stage of each particular case. It is sufficient, however, for the average physician to recognize the fact that cancer of the rectum is not an absolutely hopeless condition, so far as life is concerned. Furthermore, he should know and explain to the subject of the disease that even if the neoplasm does recur, life will have been prolonged from one to four years and much suffering have been saved. For even in very advanced cases it is best

to make an inguinal colotomy, inverting the lower end of the gut and dropping it into the pelvis, so as completely to prevent the passage of feces over the inflamed and sensitive surface at the site of ulceration. By so doing the comfort of the patient may be enhanced and life prolonged at least a year. And as now performed inguinal colostomy is practically without danger. If really necessary it can be done under cocaine anesthesia.

RESPIRATORY FAILURE: STRYCHNINE FOR

During or at the termination of operations of great magnitude entirely too much strychnine is being given everywhere; it is not at all uncommon to see a half centigram (1-15 grain) injected at one time—for “heart-failure.” Strychnine should not be given with the object of correcting heart-failure; it is a stimulant to the respiratory center and should be given when the breathing is shallow and too slow. It is therefore especially indicated in anesthesia from the hyoscine-morphine-cactin tablet when the number of respirations falls below six per minute. It should not, however, be given until the end of operative work, whenever possible, as it is apt to cause the patient to become nervous and somewhat excited.

RICKETS

There being in this interesting disease of early childhood a deficiency of the elements which should enter into the formation of bones—that is a “bone-salt starvation” the great indication, aside from proper food, is to supply the deficiency. Zinc phosphide is highly praised; from one milligram to one centigram (gr. 1-67 to gr. 1-6) should be given three times a day, according to age and the way it is borne.

In rickets there is always a tendency of the digestive apparatus to fail in its function, so great care must be

exercised not to give zinc, lime, etc., in doses too large to be accepted by the stomach and bowels without irritation. The syrup of the lactophosphate of lime is a most praiseworthy preparation; but some children cannot take it for any great length of time; it may be tried in doses of a half teaspoonful thrice daily with a child of two or three years. On account of this tendency to stomachic irritation, too, codliver oil cannot often be given, though the most eminent authorities advise it; rich cream does better; when anemia is marked and there are evidences of tuberculosis (formerly called "scrofula") forced feeding may be necessary, with the exhibition of syrup of the iodide of iron, one drop three times a day being better than larger dosage.

If there is the slightest tendency to constipation (as when the patient is taking iron) laxatives must be ordered at bedtime, preferably sodium phosphate. Phosphorus (or the phosphates) must be given freely on account of the influence phosphorus has upon the growth of bones. One or two decigrams of phosphate of lime (1 to 3 grains) may be given in milk three times a day without the knowledge of the child. The phosphates of iron and strychnine, each in 1-67 grain dose, are both very valuable. Baths, followed by massage, are excellent, but care must be exercised not to bathe the patient too frequently since hot baths weaken to a marked degree, and in these cases every energy must be directed toward building up the patient. If there be a marked tendency to bending of the legs, the little patient must be kept, as much as possible, from walking. Out-door life is indispensable; and good food also.

RODENT ULCER

This form of malignant disease may sometimes be cured by electric treatment—which ought to be tried before more serious measures are adopted. The treatment can be carried out with an ordinary portable galvanic (not faradic)

battery. The process is based on the principle of the introduction of the zinc ions into the tissues of the ulcer by means of a continuous current. By this plan the ulcer is made to assume the appearance of an ordinary simple sore, and in many instances it is healed in a few weeks after a single application. An ordinary medical continuous-current battery, with a galvanometer, a pair of wires, a flat pad for completing the circuit at the negative pole, and a rod or other electrode of zinc attached to the positive pole, completes the outfit. The zinc must be covered with three or four layers of gauze, which serve as a reservoir to hold the zinc solution, a 2-percent solution of the sulphate being suitable. The zinc should be freshly cleaned or amalgamated, and the solution should be made with distilled water. It is as well not to touch the zinc electrode or its covers with the fingers unnecessarily, because every touch imparts a trace of sodium chloride from the skin, and tends to reduce the efficiency of the process a little by bringing in some foreign ions. The circuit is completed through the usual pad electrode applied to any convenient part of the patient, the zinc electrode of suitable size is held on the rodent ulcer, and the current is slowly turned on until a current of 5, 8 or 10 milliamperes is reached, according to the size of the electrode used; the seance continuing about fifteen minutes.

RUBBER GLOVES: MURPHY'S SUBSTITUTE

Operators (or assistants) who cannot wear rubber gloves for operations like hernia may employ the solution of gutta-percha in benzin. It is prepared as follows: Gutta chips are cut in small pieces, washed in full-strength (40-percent) formalin and dried in sterile gauze. Macerate in sterilized benzin for three days, and filter through sterilized cotton, twice. Benzin is rendered sterile by putting it in a strong, well-corked bottle and boiling for

twenty minutes, the water being only warm when the bottle is placed in it. But as this solution deteriorates, like rubber, it is best to buy sterilized gutta-percha (on the market in sealed envelopes graduated for 4-, 8- and 16-ounce mixtures) and dissolve a little in the benzin each time.

Method of Use.—The hands are thoroughly scrubbed and washed in 65-percent alcohol for three minutes. They are then dried with a sterile towel. The solution is best applied by dipping the hands into a small basin containing the solution. It should be worked in around the nails and tips of the fingers, and should be applied as high as the elbows. Between operations the hands may be washed with soap and water, spirit of soap, alcohol, bichloride solutions, phenol or formalin solution, without interfering with the rubber coating. Brushes, however, should not be used. After cleansing the hands and before proceeding with another operation, the fingers should be redipped, as the coating wears off, but one application on the hands and forearms is sufficient for the entire day. The skin of the operator does not become "water logged" or shriveled with the solution, as it does with the rubber gloves. The coating is best removed by washing the hands in benzin and drying rapidly with a towel.

SAPREMIA

This is an acute febrile condition, the result of absorption of the products of putrefaction. The proper treatment is instant removal of the cause, with physic and antipyretic agent, a dose of acetanilid followed by aconitine being very satisfactory. The most frequent cause of sapremia, it should be remembered, is retention of fragments of placenta or decomposing blood-clot; emptying the uterus promptly relieves the trouble if free drainage through the cervix be provided and the vagina be kept clean by douching.

SARCOMA

This is an exceedingly malignant tumor made up of embryonal connective tissue, the small-celled and those of soft consistency being particularly malignant. It is likely to appear much earlier in life than carcinoma. It is most often found in the skin, periosteum, intermuscular septa, subserous connective tissue and the eye. Whatever the type, the earlier it is removed the better. Neighboring lymphatic glands are not implicated as in carcinoma but extension along blood-vessels must be looked for. When not removable it is to be treated by x-ray and by injection of Coley's serum (mixed toxins of streptococcus and bacillus prodigiosus) from which excellent results are occasionally obtainable.

SCALDS

Severe scalds should be treated practically the same as burns of the second degree, exclusion of the air from the burned surface being of especial necessity. If the affected surface be extensive the kidneys must be watched carefully, as a great strain is thrown on them and if they fail in their work death will follow. Morphine must be given with care. If the urine is drawn after two or three hours and found very highly colored a gram (15 grains) of citrate of potassium dissolved in a glassful of water must be given every six hours.

SCARS

Cicatrices which cause much deformity may sometimes be remedied in great measure by excision and transplantation of healthy skin into the gap; or even by a Thiersch graft. When operation is not possible, or not desired, treatment by electricity may be tried. In some cases the scars have softened, the discolorations have disappeared, the surface taking on more nearly the appearance of normal skin. The application is made with two large electrodes

moistened with a 10-percent salt solution. The negative electrode, which is applied to the sacrum, has an area of 30 square inches. This is connected with the positive pole of the induction coil, and this electrode has a surface of about 16 square inches. The apparatus should have a commutator that will enable the operator to use either the galvanic or faradic current alone or the two combined. The strength of the constant current employed to be only from 3 to 4 milliamperes. The induction current should be sufficiently intense to provoke appreciable contraction of the muscles. Each treatment should last from fifteen to twenty minutes.

Ugly Scars.—For a period varying from a few months to a year or two, scars remain red or purple, sometimes causing great disfigurement. Nothing can be done except to wait; after a long time they become pale and finally white. If in such location that they can be removed and uninjured skin secured to cover the denuded area it is proper to excise them under strictest antisepsis, suppuration causing as much cicatricial tissue as was cut out, and sometimes more.

SCOLIOSIS

Every case of curvature of the spine should be treated, howsoever slight it may be, not on account of present deformity but because it may be followed by tuberculosis and is an indication of a morbid condition of the general health. According to Codicilla, a careful research has demonstrated that scoliosis is a form of contracture, and for such conditions the rational treatment is active and passive movements in the deformed portions of the spine alone, the normal portions remaining fixed. The best results were obtained by the author with the apparatus of Schulten. The apparatus of Zander is easier of application and also gives excellent results.

SEMINAL EMISSIONS

These usually depend upon an irritable deep urethra or excitable sexual center in the spinal cord. A No. 16 (American scale) catheter introduced every third day for two weeks, and allowed to remain two minutes the first time and one minute longer every time until ten minutes are reached, will diminish this; after which a few injections of solution of nitrate of silver (10 grains to the ounce) through a Guion's or Ultzmann's syringe—ten drops behind the "cut-off muscle" twice a week—will permanently relieve the hyperesthesia. Hyoscine hydrobromide (1-100 grain) at bedtime, alone or with 20 grains of potassium bromide, relieves the spinal irritation. One emission a week demands no treatment whatsoever.

SEMINAL VESICLES: TUBERCULOSIS OF

When it is definitely determined that tuberculosis of the seminal vesicles is present (either alone or associated with tuberculosis of the testicle or epididymis) removal is the only rational treatment if the patient desires to live any great length of time. It is practically always associated with disease of the testicles and vas deferens, although its severity bears no relation to the extent of these lesions and both vesicles may be involved in one-sided orchitis. The symptoms are not striking as a rule. There is usually vesical tenesmus, and there may be rectal tenesmus and pain at stool. Examination reveals an obliteration of the groove normally felt between these organs and the prostate gland. Occasionally there is a fistula leading to the perineum. The prostate is enlarged in about one-third of the cases. Treatment may not be necessary in early cases, the lesion sometimes healing spontaneously after removal of the diseased testicle. If, however, there is a fistula or extreme difficulty at stool, or if the organ is as large as the last joint of the surgeon's thumb, it should be removed,

unless there is tubercular disease of the bladder or kidney, which may be looked upon as contraindications. The operation of choice is perineal excision by a Y-shaped incision, the shaft of the Y pointing forward in the middle line and the arms embracing the front of the anus. Drainage and healing by granulation are always to be provided for.

SEPTICO-PYEMIA

This is a name applied to a condition in which septicemia is followed or accompanied by pyemia. Leube uses the words "spontaneous septicopyemia" for a form of pyemia which appears without obvious cause, or at least following a skin-wound or bruise so trifling as to scarcely be remembered. It is characterized by pain and tenderness in the muscles and joints with high fever, irregular chills, fetid breath and septic diarrhea. There are also present from time to time ecchymoses of the conjunctiva, vesicles of the skin which contain blood, enlargement of the spleen, and albuminuria. Death by coma usually ends the scene. A supportive and eliminative treatment, with the injection of Marmorek's serum, if the presence of streptococci can be demonstrated, constitute all the therapeutic measures that are beneficial.

Experiments made in Germany on animals go to prove that the intravenous injection of antiseptics are of no value in blood poisoning, but good results are recorded from hot baths, which promote elimination by the skin and lymphatic system. The internal administration of calcium sulphide is worthy of trial.

Headache of Sepsis.—For the relief of headache acetanilid may be given—guardedly if the heart be weak. A dose of ten grains may be ordered; it may be repeated in one hour if indicated, but no more should be permitted until twenty-four hours have elapsed. A tablet called

“acetanilid and codeine compound” will be found preferable in some cases. It consists of

Acetanilid	grs. 3	1-2
Sodium bromide.....	gr.	1-10
Sodium bicarbonate.....	gr.	9-10
Codeine sulphate	gr.	1-4

The dose is one or two when needed for pain; to be repeated once only if the first dose does not produce comfort.

SEQUESTRUM: REMOVAL OF

Whenever, in the healing of a fracture, a detached fragment of the bone does not grow into the callus and form once more a part of the living bone, it becomes necrotic and a source of irritation. The only treatment is by removal. The same is true of a sequestrum formed by tuberculous disease, but in this kind of trouble the cavity must be cureted and packed with iodoform and iodoform gauze, and allowed to heal by granulation from the bottom.

SEXUAL DISORDERS

Sexual Debility: Senecín for—If there is any drug which may properly be called a “sexual tonic” it is senecín: the active agent of *senecio aureus* or “squawroot.” The dose is one to two milligrams (gr. 1-6 to gr. 1-2) three or four times a day. It is most highly recommended for women who complain chiefly of a sensation of weight and dragging in the pelvis, yet who have neither prolapse nor laceration of the pelvic floor as a cause.

Sexual Depressant: A Good—For the control of nymphomania, as well as depressant of eroticism or erethism in morbidly excitable patients who are compelled by circumstances to observe enforced continency, the following combination may be prescribed:

Calcium sulphide	0.01
Salicin	0.01
Camphor monobromate	0.01

These may be obtained in granules of one-sixth of a grain each, or may be dispensed in capsules with some convenient vehicle. If in granules, the dose is one or two every four or six hours. Four may be taken a little before bedtime so that erotic dreams and sensations may be avoided during the hours of sleep. The camphor monobromate may be increased to 4 or 5 grains if necessary.

Sexual Irritation: Symptoms of—The intimate connection which exists between the sexual sphere and the skin is well shown in certain pathological conditions of the latter, dependent upon the irritation of the former. The appearance of many pimples upon the face is a common accompaniment of the menstrual period with perhaps a majority of women; and the occurrence of persistent acne in girls at adolescence, when there is an unusual degree of sexual disturbance (masturbatory or otherwise) is well known. It dies out, usually, with the completion of adolescence or by the complete sexual gratification of married life; but it is apt to appear at the time of the menopause, since this is a period of sexual excitement with many women.

Sexual Neurasthenia.—As an aphrodisiac as well as general tonic in sexual neurasthenia "the three arsenates" with nuclein will often give satisfactory results. A tablet consisting of

Strychnine arsenate.....	0.0005 (gr. 1-134)
Quinine arsenate	0.001 (gr. 1- 67)
Iron arsenate	0.001 (gr. 1- 67)
Nuclein solution	0.25 (drops 4)

may be ordered, of which one is to be taken every two hours, or three after each meal and at bedtime. In the debility of advancing age this has given most excellent results. Nuclein is declared to be the most powerful known stimulant to the sexual organs.

SHOCK

In that form of shock due to severe impression on the central nervous system, as when a large bone is suddenly shattered or a cavity penetrated or an important viscus is wounded or a limb injured by a pistol or rifle ball, the effect is often profound—the most prominent symptom being the general distress of mind and alarm which the patient shows upon his face and which comes on almost instantaneously upon the infliction of the injury. The patient trembles and totters, is pale, complains of being faint, perhaps vomits, and sinks to the ground; his features express extreme anxiety and distress. This emotion is in great measure instinctive and seems to be a sympathy of the whole frame with the part subjected to serious injury, expressed through the nervous system. The first indication is to check hemorrhage; the second to stimulate the heart. Whisky is not bad. A hypodermic injection of glonoin is next advisable, followed by atropine to maintain its influence; and later one of strychnine, with a little morphine if pain is a prominent symptom.

Post-Operative Shock.—After a serious operation there is of necessity a period characterized by weak and rapid heart-action, the result of hemorrhage and pain; but this should be transient. Martin says if in an adult the pulse remains above 144 for more than six hours the condition is distinctly dangerous. After twelve hours the prognosis is bad, and after more than twenty-four hours nearly but not quite hopeless. Whatever be the cause of this condition, its cure is dependent upon active stimulation supplemented by elimination. Therefore in addition to external heat dilute hot rectal injections are highly important. Of these coffee takes first rank, one pint of this at a temperature of from 112 to 116 degrees being thrown into the rectum. The stomach under these circumstances is

non-absorbent and extremely prone to acute dilation. Therefore, unless dilated, it should be left alone. In the cases associated with acute dilatation, or followed by long-continued vomiting, the stomach should be emptied by tube and irrigated with hot, salt solution, but there is danger of reflex cardiac inhibition.

Shock With Abdominal Pain.—Very often in abdominal disease and acute trauma the patient's mind becomes dulled: apathy—and later unconsciousness—appears; urine excretion is diminished or absent, the pulse and respiration become imperceptible, temperature subnormal, pupils dilated, slowly responsive or fixed, and death occurs speedily, in the severe types of disease or injury. Vomiting is frequently prominent, but comes from acute sepsis, not peritonitis. A death of this kind very soon after an injury or rupture of an abscess may usually be said to be due to shock; but if death be delayed more than a few hours it is from acute sepsis. "Deferred" or "delayed" shock is sepsis, pure and simple. But there is a true shock associated with acute pain: Severe traumatism (especially if productive of sudden, complete rupture of liver or spleen or perforation of bowel, uterus or bladder); violent hemorrhage; acute pancreatitis; sudden complete blocking of the ureter, the biliary passages, or even the pancreatic duct; mesenteric embolism; sudden strangulation of the gut or even omentum by constriction of a hernia or twist; torsion of the pedicle of an ovarian or uterine tumor—all these are always more intensely shocking than the same lesions when slowly produced, and are always accompanied by much suffering. From this kind of shock the temperature slowly rises, often going to 100; but the chief guide is the pulse. A progressive, even slight, hurrying and weakening of the pulse, with or without persistent lowering of body-temperature, is indicative either of persistence of the exciting cause, the superaddition of more

or less sepsis or of gangrene; and, especially if accompanied by cessation of pain, may be regarded as a pretty constant indication for immediate operation.

SILICATE OF SODIUM SPLINTS

This formula, for the manufacture of a firm, durable splint—very valuable in the fixation of certain fractures after the swelling has subsided—has been sold to many physicians for ten dollars;—sometimes more:

Powdered starch.....	ounce 1
Isinglass or gelatin.....	ounce 1
Solution of sodium silicate.....	quart 1
Powdered boric acid.....	ounce 1-2

Mix the starch with the solution of sodium silicate by shaking through a pepper-box and stirring constantly till mixed. Reduce the gelatin to the consistency of mucilage with boiling water and mix well with the first two. (Better swell with cold water first.) Then put in a jug of double the capacity and ferment at room or sun temperature for three or four days. Then add the boric acid, mix well, and it is ready for use. If too thick after standing, thin it with boiling water. Keep the jug well corked.

Apply a silk stocking or roller bandage, then a coat of the preparation with a brush, and repeat till three or four layers are applied or until the splint is thick enough. It may be cut after hardening and eyelets and laces put in.

SKULL: WOUNDS OF

Every suspicious wound of the scalp should be thoroughly explored to see that there is no fracture beneath; in case of doubt the wound to be enlarged for perfect inspection. The following rules laid down by Adams are to be carefully observed:

Gutter fractures should be invariably operated upon as early as possible to get rid of bone fragments, clot and

debris, and to provide outlet for the products of infection which is common to these cases. Without early operation these wounds suppurate, and the operation is too late. (Von Manteuffel.)

In transverse perforating wounds cleanse orifices and await symptoms.

In superficial penetrating wounds with lodgment, exploration with removal of bone fragments and bullet should be made if practicable.

In transverse penetrating wounds cleanse the orifice of entrance, await symptoms, and practise radiography.

Cases of compression by blood extravasation with localizing symptoms are rarely seen. When extravasation can be localized and is accessible, it should be treated on general surgical principles.

In some cases of penetration there may be fracture of the skull opposite the point of entrance, without exit opening.

Such a condition requires exposure and removal of bone fragments; the bullet in such cases is rarely found near the second fracture, generally having been diverted to some other region by ricochet on the skull-wall.

The question of removal of a bullet lodged in the cranium is one of special interest, inasmuch as a widespread belief prevails that a lodged bullet is *per se* a most dangerous thing. The danger lies in the damage done to the brain by the passage of the bullet through its substance, and, unless symptoms arise which can be traced to persistent irritation by the presence of the bullet, or radiography demonstrates that the bullet is in such a position as sooner or later to produce irritation, no attempt should be made to remove a deeply seated bullet from the cranial cavity. Whenever we are confronted by the question of the removal of a deeply lodged bullet, it should be definitely ascertained that the symptoms present are

due to irritation from the presence of the bullet itself, and not to its having inflicted damage on certain regions of the brain on its way to its present location, for the removal of the bullet could in no way affect the injured cerebral tissue.

SNAKE-BITES

With any snake-bite the wound should be filled with potassium permanganate, well rubbed in; and a few drops of 25-percent solution should be injected around the site of the injury. If seen early, a tourniquet should be applied a little above the wound, gradually loosened, a little each hour. The Western treatment—as much whisky as necessary to produce a “dead drunk”—is efficacious chiefly because it does away with the deadly fear. Two tablets of hyoscine-morphine-cactin (H-M-C, Abbott), an hour apart hypodermically, will do almost as well, though the profuse perspiration induced by the whisky probably helps to quickly eliminate the poison. Pilocarpine hypodermically is also of benefit for this same reason. A good saline cathartic is also excellent given as soon as possible. When the heart flags (from the acute sepsis) strychnine, digitalin and sparteine may be administered, hypodermically. Hypodermoclysis is of value, also, to stimulate the flagging heart and help rapid elimination. Incision and sucking of the wound at time of bite often extracts much of the poison.

SOAP SUPPOSITORIES

When glycerin suppositories are not obtainable, a cheap and efficient substitute is soap. A piece about the size of a man's thumb is made smooth, is wetted and pushed as far up the rectum as a finger will carry it. Loose, easy bowel-movement soon results. It is particularly applicable to young children who fight at every attempt to give an enema.

SPERMATOCELE

This form of "retention tumor" is quite rare. If the obstruction to the outflow of semen be complete the tumor may eventually attain considerable size as presenting clinically. It contains non-albuminous fluid with great numbers of spermatozoa. Their origin is not always the same, but in the main is that of retention-cysts formed in various ways, either externally or internally, by obstruction of the seminal tubules. Their diagnosis before tapping is not easy, but may be helped by ascertaining the position of the testis. Treatment either by injection of irritating solutions or by operation is exceedingly simple and satisfactory

SPINA BIFIDA

When parents will not consent to operative measures or when the case is presumed not to be favorable for surgical treatment Morton's method may be adopted: injection into the sac of one dram of a preparation of 10 grains of iodine and 30 grains of potassium iodide in one ounce of sterilized glycerin. About one dram of cerebrospinal fluid is permitted to run through the needle before the injection is made. The point of entrance is covered with bichloride gauze and a bandage not too tightly applied.

SPINE: DEFORMITIES OF

The present status of these troubles is well summarized by Cokenower, thus: (1) The statistics and histories of all cases of deformities of the spine, even in children, shortens longevity, and especially so with extreme scoliosis when the average age does not exceed 30. (2) All deformities of the spine can be relieved if treatment is begun early or so soon as any deformity exists, and those without bone deviations are simple and amenable to successful correction, and those with osseous change,

even in children, can be improved, but not so in adolescence and adults. (3) The law of growth and development of osseous as well as soft tissue is fully demonstrated in the abnormalities, distortions, deformities and actual and permanent normal functional disturbances; when the equilibrium of the normal axis of the body has been destroyed, no matter whether it be the result of torticollis, knock-knee, bow-legs, club-foot, short-leg or any other cause, the results are the same according to severity. (4) The medicinal and mechanical treatment should be augmented with hygiene, gymnastics and all other properly guarded means that will develop the body, give tone and power to the muscles, increase vital functions and materially improve the general health.

SPLANCHNOPTOSIS

This is a name given to general prolapse of the abdominal organs; including gastropptosis, enteroptosis and prolapsus uteri, and sometimes hepatoptosis and splenoptosis. With these are associated certain nervous symptoms generally called "Glenard's disease." Relief of the ptoses by either mechanical support or by surgical intervention rarely, therefore, cure the patients unless followed by judicious internal medication continued over a long period of time.

SPLEEN: ABSCESS OF

A few cases of abscess of the spleen have been cured by making a large incision (sometimes with removal of a part of eleventh and twelfth ribs) and opening the abscess after carefully surrounding with gauze. When thoroughly evacuated the abscess-cavity is to be tightly tamponed with iodoform gauze and the splenic peritoneum sutured to the parietal around the entire circumference, the parietal peritoneum being dissected off for a considerable distance

if necessary, in order to render it sufficiently loose to permit sewing without undue strain upon it. Then gauze is to be carefully packed in between this line of sutures and the gauze-pack, to prevent, if possible, leakage of pus for a few hours, until protective adhesions can form. When the patient's condition is such that prolonged operation is impossible it may be necessary to rely upon careful packing alone, the abdomen being bandaged tightly for a few hours and patient kept lying upon the left side, to force spleen against abdominal wall and thus favor promotion of the adhesions upon which life depends. Splenectomy is rarely possible on account of the deplorable condition of the patient by the time a diagnosis is made. Subsequent treatment is merely free drainage and tonics internally.

SPONDYLITIS

This name is frequently used as a synonym of Pott's disease, inflammation of one or more vertebræ of tuberculous origin. It is treated by immobilization and general antituberculous medication. Spondylitis deformans is an affection generally described as an "inflammation" of the vertebræ of gouty or rheumatic origin, terminating in ankylosis and deformity. There are no curative measures, though rarely an improvement follows systematic muscular training with some mechanical assistance.

SPRAINS

This is a name applied to an injury to a joint, the pathology being a strain of muscle, tendon or ligament, frequently with more or less tearing of the implicated structures and with an outpouring of blood from the rupture of small vessels. Very often that which is generally called "sprain" includes epiphyseal separation or fracture of bone as well as injury to the soft parts.

A special form is known as "riders' sprain" an injury to the adductor longus muscle of the thigh, from a sudden effort to retain one's seat when the horse springs sidewise. The soreness sometimes persists for many days in spite of active massage and application of stimulating and pain-relieving liniments.

Ichthyol for Sprains.—To remove the swelling which follows a severe sprain, especially of the ankle, when the ambulatory instead of fixation-treatment is to be adopted, ichthyol may be ordered for frequent and deep massage. On account of its nasty smell phenol may be added, or oil of citronella. It should be combined with lanolin to get best results:

Ichthyol 8.0 (drs. 2)

Lanolin 32.0 (oz. 1)

Oil of citronella 2.0 (grs. 30)

Mix. Directions: Apply by deep massage three or four times a day.

STATUS LYMPHATICUS

This peculiar condition, associated with an enlarged thymus gland and hyperplasia of the lymphatic glands, is presumed to be the cause of death in some of the fatalities reported from ether (and chloroform) anesthesia. The number of recorded cases in which status lymphaticus has been found in adults is increasing. Many of the sudden deaths which follow chloroform narcosis are reported from Europe, and are found to be due to this cause. The recognition of status lymphaticus by American surgeons by whom ether is more often used than chloroform has shown that death in such cases may follow ether narcosis. It is possible that the anesthetic may have nothing to do with death in these cases. The recognition of status lymphaticus is very difficult during life. A slight increase of dulness to the left of the sternum or enlarged lymph

nodes, together with a pale skin and well developed superficial fat, raises a suspicion of such a state, but these signs can hardly be relied upon to identify the condition.

In the treatment of failure of respiration the condition in artificial respiration is of little use, and the heart stops so quickly that drugs have little time to reach the cardiac and respiratory centers even if given hypodermically after the collapse is first noticed. It is possible to anticipate shock by giving digitalis before the operation and morphine and hyoscine hypodermically just before the anesthetic is started. Intravenous injection of adrenalin in normal saline solution, 1 in 50,000, has been shown by Crile to stimulate the heart and rapidly increases blood-pressure, and is unquestionably a useful procedure in these cases.

STERILIZATION IN SURGERY

Sterilization of Instruments.—All instruments to be used in aseptic operations must be boiled for twenty minutes just before using. This applies to knives and scissors as well as other utensils, but in order to be certain that they are not dulled by this process about one teaspoonful of washing soda—sodium carbonate, *not* the bicarbonate used in cooking, which is useless for this purpose—must be added to each quart of water. In hospitals the instruments as well as gauze may be sterilized by steam, but it requires a long time, whereas by boiling, the things are ready by the time the hands are cleansed. The water may be poured off and the pan allowed to stand for a few minutes to cool in a place where there is no dust, or covered by a towel out of boiling water. When everything else is ready the instruments are to be taken from the boiler and laid upon towels just taken from the sterilizer or boiler (and not handled by anyone) or, better, placed in three or four pans properly sterilized. They must be so placed

that wind does not blow over them and that no one save operator or assistant shall touch them.

Sterilization of Pans.—In most hospitals and in practically every operation in a private house too little attention is paid to the sterilization of pans. In hospitals they may be rendered surgically clean by placing them in the sterilizer for an hour in steam of high pressure; if not, they must be cleaned as in a private house, viz., (1) by thorough scrubbing outside and in with soap and water, (2) drying with a clean towel and (3) pouring a little alcohol over each and setting it afire. This, however, sterilizes only the interior of the pan or basin. A better way if there be time enough is to put a wash-boiler on the kitchen stove, fully two-thirds filled with clean well-water or ci-tern-water and boil all the pans and trays for twenty minutes. In the pot should be placed (a) two pans for instruments, (b) one smaller pan or platter for sutures and ligatures, (c) one small bowl for alcohol, (d) one large earthen bowl for sublimate solution, (e) one large bowl for boiled water, (f) one long-handled dipper. After these have boiled the required time they are to be taken out by means of a sterilized 8-inch clamp or forceps, and no one beside the surgeon or assistant permitted to touch them. A sterilized towel should be hung over one end of the boiler for the long-handled dipper to lean against because the upper part of the boiler will not be surgically clean and the water will be contaminated by the dipper's falling into it if this precaution is not taken. With the same pans or in the same pot may be boiled the towels or torn-up sheets or old cloths which are to be used around the field of operation. And the water may be used for making the solutions and for washing purposes: hands, skin of patient, etc. In private houses extreme vigilance is essential to prevent too willing neighbors from sticking their dirty fingers into the water, dipping hot

water out of the surgeon's boiler, etc. It is therefore best to have the room emptied while completing operations.

STOMACH

Cancer of Stomach.—There can be no doubt but that cancer of the stomach is curable by early operation; the trouble is to determine its existence very early, and to convince the patient of the seriousness of his condition; and often life may be prolonged and rendered far more comfortable very late in the disease. For this reason an exploratory operation should be done, even in cases where the disease is advanced and a tumor is perceptible. When the disease is too extensive for any radical operation to be done, the palliative operation of gastroenterostomy is indicated. It can be done with very small risk and may considerably prolong life. Besides, some cases, thought to be cancer, too extensive for removal, have cleared up after a gastroenterostomy, the patients getting quite well. In cases of disease of the cardiac end of the stomach too extensive for removal, the operation of gastrostomy may considerably prolong life and prove of great comfort to the patient by preventing death from starvation. Even when the disease is too extensive for either removal or a gastroenterostomy, the operation of jejunostomy may prove of service to the patient. When a radical operation can be performed, the thorough removal of the disease may bring about as much relief to the patient as does the operation for the removal of cancer of the breast, uterus, and other organs of the body. Following any of these operations food is to be selected of such character that all of the digestion shall be intestinal; otherwise fatal diarrhea will be set up.

After-Treatment of Stomach Operations.—Upon being returned to bed the patient should be placed with head and shoulders considerably elevated, unless severe

shock demands temporary lowering of the head, because such position best relieves tension on the sutures and facilitates passage of gastric mucus through the pylorus or anastomosis hole. Later the patient may be turned upon the right side for a rest, once or twice daily.

Should vomiting persist after the second day the stomach must be carefully washed out, a little sodium bicarbonate being added to the water. This lavage must be done with extreme gentleness, with the patient lying quietly upon his back.

STREPTOCOCCIC FEVER: OPERATION IN

When the infective agent in puerperal fever is the streptococcus, as demonstrated by its appearance on the eighth to eleventh day and proven by bacteriological findings from examination of a little of the intrauterine debris, cureting is distinctly contraindicated. Since in the milder forms of streptococcic endometritis the leucocyte-wall is the barrier against systemic infection, use of the curet opens the lymphatics and disseminates the pyogenic bacteria; while in the severer type the leucocyte-zone is not established but the streptococci are already in the deeper strictures where they cannot be reached by the curet and once more the only influence of that instrument is to help further bacterial invasion. This is, therefore, the exact opposite of sapremia, the acute fever which arises on the second to the fifth day from the germs of putrefaction, in which instant removal of the decomposing material with the Volkmann spoon or large curet is imperative if life is to be saved. All that is necessary in streptococcic infection, then, is to insert a small strand of gauze through the os to insure good drainage and to employ internal remedies to assist nature to carry the patient through the acute stage until the inflammation localizes itself, after which pus can be evacuated whenever found.

STRICTURE

Urethral stricture may sometimes be remedied by gradual dilation with sounds. Forcible dilation (divulsion) with an Otis's dilator formerly was very popular but has fallen into disrepute of late. Internal urethrotomy is much in favor with some; but when gradual dilation is not possible or the patient demands early relief external urethrotomy is to be preferred. A large sound must be passed every week for many months, regardless of the discomfort.

Strictures Cured by Thiosinamin.—Some most remarkable results have been reported in the treatment of strictures (especially of the esophagus) by this drug. *Therapeutic Medicine* says: Thiosinamin is a white crystalline powder, slightly soluble in water, easily soluble in alcohol and having a faint odor of garlic. It has been used in dermatology to promote the absorption of scars and cicatrices following lupus, psoriasis, contractures, keloids, etc. It has also been used in the treatment of stenosis of the esophagus. It is hard to say whether the drug actually dissolves or absorbs the scar-tissue, but the good effects (which may also be due to the scar becoming elastic and yielding) cannot be questioned.

The drug is given subcutaneously in a 10-percent aqueous solution, a syringe-ful daily, and marked improvement generally follows in a month's time. It may be used in combination with sodium salicylate after the following formula:

Sodium salicylate	1.0 (grs. 15)
Thiosinamin	1.0 (grs. 15)
Water	10.0 (drs. 2 1-2)

Injections of thiosinamin near a scar bring about marked improvement. The quantity injected each time is a syringe-ful containing one decigram (1 1-2 grains) of the drug. The above combination of thiosinamin with sodium

salicylate is practically equivalent to Mendel's fibrolysin, which has been used for the same purpose.

STYES

Staphylococcus infection of a meibomian gland is just the same as any other boil except that it affects the margin of the eyelid instead of a hair-follicle on the surface of the body. When the infection first becomes apparent it is good practice to apply:

Yellow oxide of mercury	0.5
Lanolin	30.0

By using this as an inunction, every three or four hours, suppuration may sometimes be prevented. As soon as pus forms the little ab-cess should be opened and the pus carefully evacuated. Then the eyelid (especially at its margin) should be washed frequently with saturated solution of boric acid to prevent infection of adjacent glands and follicles. If the pain be severe a little acetanilid may be prescribed: one-third of a gram (5 grains) three or four times a day either alone or with half a decigram (gr. 3-4) of codeine. As a rule, styes, like boils, are found in patients with bad general health; so iron, strychnine and arsenic are also indicated, with the use of a small dose of epsom salt once daily until the "crop" of styes is entirely eradicated.

SUPPURATION

Calcium Sulphide in Suppuration.—It is hard to explain how a purely local process like the discharge of pus from a sore may be affected by medicines given internally; but clinical evidence is abundant that when an infected wound is discharging a thin, watery, nasty pus and persistently refuses to granulate and heal, the use of sulphide of calcium will soon effect a marked change. Under its influence the discharge becomes at first more

abundant but soon diminishes and the pus becomes thick and creamy—the “laudable pus” of older writers—the pus which is present upon a healthy wound granulating under staphylococcus infection only. The best dosage is five centigrams (about a half grain) in form of a granule four times a day.

Deep Glandular Suppuration.—Quite often the deep cervical glands become infected, particularly in weak children who have had measles or scarlet-fever. In such cases, or in any case where deep-seated suppuration is suspected, sulphide of calcium sometimes acts beautifully. Unless the pus can be located and drainage established, the pain, fever and constitutional disturbance may become dangerous, a fatal result often having been observed. If one centigram (about one-sixth of a grain) of calcium sulphide be given every hour when the patient is awake, the pain soon lessens, the fever subsides, the abscess becomes well defined and may be opened much sooner—it will even “break” of itself in four or five days instead of the two or three weeks it would otherwise require.

SUTURE-MATERIALS

Catgut.—Plain catgut is used for all ligations and for suturing all deep structures excepting the intestines.

Chromicized Catgut.—Some surgeons are now using chromicised catgut (twenty-day) for sewing the skin. It certainly is very satisfactory, and may be left to be absorbed when one does not want to open the dressings for weeks. It is also of great use for closing the cervix when operating for lacerated cervix and lacerated perineum at the same sitting; the ten-day kind being used. It may be employed with best advantage as a buried suture, especially in operations for hernia.

Silkworm-Gut.—For suturing the skin silkworm-gut has been found to be less irritating, and better, than any

other material excepting silver wire. It is sterilized by boiling with the instruments for 20 minutes at time of operation, though in case of extreme haste it may be simply washed with soap and water and immersed in alcohol for two minutes. It should *never* be used as a buried suture. Stitches, as a rule, should be removed from the seventh to twelfth day.

Silver Wire.—This is excellent for skin-sutures, but is expensive. It is now used chiefly for the repair of the cervix and perineum, and as a buried suture where permanent apposition is to be maintained, as in hernia.

SYNOVITIS

Inflammation of a synovial membrane is quite common by reason of infection through trauma, gonorrhea, etc. Various pathological conditions are generally grouped under this head, as syphilis, tuberculosis, etc., but these are not true synovitis but specific infections characteristic of each cause and partaking but little of the general pathology found in true synovitis—for the word should be limited to infection by pyogenic microorganisms. The trouble has been that the older pathologists have seen a tuberculous infection of the synovial membrane (known to be such) become secondarily involved in a true pus-producing inflammation and have not recognized the trouble as one of mixed infection. Various forms described in text-books are likewise dependent upon invasion of the joint by pus-producing bacteria, as “metritic” (staphylococcic or streptococcic), secondary to uterine infection; “puerperal” (also staphylococcic, streptococcic, etc.), occurring after child-birth; “scarlatinal” (streptococcic), associated with scarlet-fever; “exanthematous,” etc. Various forms of bacteria may, under peculiar circumstances, become pus-producing and give rise to serious synovitis, as the bacillus typhosus, Pfeiffer bacillus (influenza), pneumococcus and, typically, gonococcus.

Acute Synovitis.—Acute synovitis may be treated by compression with bandage or may be surrounded by the kaolin and glycerin compound (cataplasma kaolini U. S. P.). Later lead and opium may be used, applied hot, the joint covered with flannel and rubber tissue over all. Later, if effusion persist, the serum may be removed through a large needle. The skin must be prepared with extreme care (as thoroughly as for an abdominal section—indeed at the knee more carefully, because opening of the knee-joint is more dangerous than cutting into the belly); the needle must be boiled just before using; and the hands must be perfectly clean, or rubber gloves used. After withdrawal of the fluid the opening must be closed by collodion or a pad of sterile gauze. Internally one may use the acetanilid compound of the U. S. P.:

Acetanilid	70.0
Caffeine	10.0
Sodium bicarbonate	20.0

A half-gram (seven grains) may be ordered three times a day, either alone or with a half grain of codeine sulphate. The bowels must be kept open.

Gonococcal.—When the gonococcus infects the synovia (by blood-transmission or otherwise) it produces an acute inflammation which has erroneously been called “gonorrheal rheumatism.” It has nothing whatever to do with rheumatism, but is a true inflammation due to the action of a specific microorganism. It may be treated the same as any other acute synovitis until it is seen that nature cannot care for the trouble, the recuperative power of the synovial membrane being overwhelmed, and pus accumulates. Then the joint must be opened and drained under strictest antiseptic precautions so as not to ingraft a staphylococcus infection upon the membrane.

Other Forms.—Synovitis dependent upon milder infections, such as typhoid germs, the bacillus of influenza,

the coccus of pneumonia, etc. (and often even the gonococcus) so long as they are unmixed with true pyogenic poisons may be treated by less energetic measures: rest, cooling applications like lead and opium wash, icebags, cataplasma kaolini, and alcoholic lotions such as tincture of arnica, tincture of camphor, etc. The essential element is enforced rest, and later massage. Internally acetanilid may be given to control pain, aconitine to reduce fever (if much), codeine to induce sleep if pain is great or chloral and bromide if there is not much suffering. Salicylate of phenol (salol) acts well in many cases.

Staphylococcal.—Infection by staphylococcus (acute inflammation of the synovial sac following an ordinary punctured wound) is somewhat serious if the joint be a large one like the knee or elbow. Immediate free incision is advisable, followed by irrigation with large quantities of normal salt solution; and the establishment of perfect drainage. All this must be done under the strictest antiseptic precautions to prevent engrafting a streptococcus infection upon the less virulent type already present. Drainage may usually be discontinued about the third to sixth day unless fever and great swelling continue. In case there is a great amount of injury to the joint it is well at time of first treatment to fill the joint with phenol-camphor solution (see formula elsewhere). In many cases a useful joint may be expected.

Streptococcal.—Infection with the streptococcus (erysipelas) is a most serious condition. The most energetic antiseptic treatment must be employed as soon as the symptoms (and microscopic examination of the discharges) show the presence of this type of inflammation. Multiple incisions, with through-and-through drainage by means of gauze strips, injection of iodoform emulsion, free use of the phenol-camphor solution, and systemic treatment to sustain the power of nature must be attended to promptly.

In many cases amputation well above the infected areas offers the only hope of life, when a large joint is implicated; and when indicated there must be no delay.

SYPHILIS

As soon as it is seen that a suspicious sore is syphilis the patient should be put upon energetic mercurial treatment. One of the best prescriptions for secondary syphilis is:

Hydrargyri cum creta.....grs. 20

Pulv. ipecac. et opiigrs. 20

Misce et fit capsul. No. XX. Sig.: One three times a day. The Dover's powder in this dosage just about equalizes the tendency of the mercury to cause diarrhea. When there is need of extreme haste (as when the eruption on skin is conspicuous) the official ointment (unguentum hydrargyri) may be rubbed freely in the groins and axilla twice daily; and rarely mercurial baths may be ordered.

Recently the administration of mercury hypodermically has become quite popular, and it does seem to give better results than the older methods, though it is attended by some pain. Hebra's solution seems to be most popular: One-percent solution of bichloride of mercury is added to a 6-percent solution of salt, in equal quantities. Of this solution from 20 to 30 minims are injected, representing from a twelfth to an eighth of a grain of the sublimate. The injection is made directly into the body of the gluteus maximus muscle, three to five times a week; or every day if too much local soreness does not result, abscesses not infrequently occurring, even when great care is taken to clean the skin with alcohol. From twenty to thirty injections usually cause total disappearance of all symptoms. But this treatment should be supplemented by a year's use of good-sized doses of mercury internally. The most commonly used preparation is the protoiodide (hydrargyri

iodidum viride) the average dose of which is one centigram (gr. 1-6) three times a day.

Iodine and iodides are given entirely too indiscriminately. They are chiefly useful in tertiary lesions: joint affections, gumatous tumors, chronic ulcers, etc.; and here they frequently have to be given in extraordinary dosage. It is usual to begin with two grams at a dose (30 grains) three times a day, of either potassium iodide or other salt and rapidly increase the quantity until at least ten times that dosage is reached, the limit being the tolerance of the stomach. It may be taken in Vichy water, in milk, in syrup of sarsaparilla or in syrup of trifolium; if in simple water it must be highly diluted. It is often necessary to continue the enormous dosage for many weeks, particularly in brain tumor of syphilitic origin; occasionally stopping for a few days to let the stomach rest.

After the tertiary symptoms for which the iodide is given have disappeared, it is well to let the patient's stomach rest for a fortnight and then order mercury to be taken for several months. "Mixed treatment" is wholly irrational and cannot be too strongly condemned: the patient needs either mercury or the iodides; the remedy to be selected depends upon the character of the lesions.

Pilocarpine in Syphilis.—Wm. J. Robinson, of New York, advocates the use of pilocarpine as an adjuvant to mercury in cases in which the system has become saturated with mercury and it has ceased to have the desired effect. The glands continue hard, swollen, and tender, and stomatitis is marked. Gastrointestinal, hepatic, renal and skin activity have been neglected. The pilocarpine causes the elimination of mercury that was stored up in the salivary glands and acting as a toxic body. In the bowels and kidneys the elimination has been too great for the organs, and the pilocarpine causes the skin

to act and carries the mercury to the seat of the skin lesions. The author recommends its use in doses of 1-30 to 1-8 grain, two or three times a day, without other drugs. It is of much value in secondary manifestations, and is a most remarkable glandular eliminant. In some cases supersaturation with mercury produces intolerance of the drug, and the use of pilocarpine for a short time will enable one to resume mercury with excellent effect.

Syphilitic Fever.—It has often been observed, but is frequently forgotten, that syphilitic fever may begin in the early secondary period and last into the tertiary period. It may or may not be accompanied by visceral manifestations, especially in the liver, but the fever does not seem to be dependent on these lesions. It may fall spontaneously without specific treatment, but easily returns. When it appears late in the disease large doses of potassium iodide are given until it falls by lysis; but in the late secondary stage of lues mercury in large doses checks it much more promptly than does the iodides.

Syphilis in Children—In country practice as well as in city work syphilis of childhood is often unrecognized; and especially is luetic disease of bone mis-called "rheumatism." This trouble almost always begins as a periosteal thickening with some tenderness; rarely with a little fever. It affects the heads of the long bones first, as a rule, but sometimes also the shafts; as the thickening around the bones increases the soft tissues gradually become infiltrated, the exudation of deposit extending toward the surface until the implicated part of the limb appears much swollen, the skin finally assuming a tense, shining and slightly reddened appearance, with much pain and decided tenderness. A diagnosis of tuberculosis should not be made (there is absence of the characteristic spindle-shape; nor should it be mistaken for rheumatism); there is but little impairment of joint-function

save that due to the swelling; the presence of Hutchinson teeth or of iritis makes recognition sure. In these cases iodides are of more value than mercury; they should be given to the limit of tolerance. A child of three years will often take two grams (30 grains) of sodium iodide three times a day.

Syphilitic Periostitis.—This is usually best treated by gently rubbing in of mercurial ointment twice or three times a day, with good doses of calomel internally; and rest. If the pain becomes severe acetanilid may be ordered in half gram (8 grain) doses.

Syphilitic Ulcers.—In addition to the internal treatment local measures must often be adopted. If the patient's occupation will permit, iodoform powder is the best to use; but if the smell renders it impossible bismuth subiodide may be substituted, using one part of that drug to five parts of powdered boric acid.

TALMA OPERATION: HEPATIC STIMULANT AFTER

After performance of the Talma-Morrison operation for cirrhosis of the liver (suturing the great omentum to Glisson's capsule and to the peritoneum) it is well to give a good "hepatic stimulant." By the action of a pill or granule containing

Juglandin0.005 (gr. 1-12)

Quassin0.01 (gr. 1-6)

Strychnine arsenate.....0.005 (gr. 1-134)

free bowel movement may be secured and maintained, with much freer flow of bile than usual. It is best to begin with three before each meal, then reduce to two and finally to one. Reaccumulation of ascites may be prevented by the early and persistent use of this combination. Boldine is also highly recommended in these cases, the dosage

being two to six of the 1-67-grain granules three or four times daily.

TESTICLE: UNDESCENDED

There is no unanimity of opinion as to the most favorable age for operation nor as to the technic for cryptorchidism. One should consider the age, whether unilateral or bilateral, whether pain or psychical symptoms are present, presence of complications, position and degree of atrophy of the undescended testes. The non-operative treatment consists in massage and manipulation with a view to bringing the organ into the scrotum, or a truss above the gland to force and hold it down. But as such testicles have been proved to be invariably functionless the best treatment is excision, with careful obliteration of the inguinal canal to prevent hernia.

TETANUS

The first thing to do when symptoms of tetanus arise is to thoroughly open the wound, cauterize its every part with a red-hot Paquelin cautery and pack loosely with iodoform gauze. Next begin with chloral and bromides in enormous doses, the more the better; four grams (60 grains) every three or four hours frequently are required to prevent the spasms. Next give a cathartic. Then administer pilocarpine until profuse sweating is produced—and keep it up. As soon as the tetanus antitoxin is obtained give it in large doses both by intraspinal and subcutaneous injections—from 60 Cc to 80 Cc a day to begin with, increasing to as much as 160 on the fifth day. About 200 Cc may be given altogether on the sixth day, by which time the patient will be either dead or convalescent.

Tetanus Cured by Spinal Injection.—Very recently successful results have been reported in the treatment of

tetanus by spinal injections. Sixteen Cc of cerebral fluid are withdrawn and 3 Cc of the following solution injected: 1 1-2 grains of betaeucaine, 1-3 grain of morphine sulphate and 3 grains of sodium chloride, with sufficient water to make 3 1-2 ounces. This procedure has been repeated four times in the cured cases.

TONGUE FORCEPS CONDEMNED

No anesthetist should use tongue-forceps—they are utterly inexcusable. If the tongue drops back into the throat and chokes the patient, elevation of the jaw by placing two fingers under the angle on each side and throwing the head upward and backward therewith, will produce instant relief, unless there be accumulation of mucus in the throat, in which case the head must be turned to one side and a swab introduced to clean out the obstruction. When extensive operation is to be done in either mouth or throat a strong silk thread should be passed through the tongue far back and tied in a huge loop; this will enable the assistant to hold the tongue up out of the way without the serious mutilation which results from the use of forceps on the tongue.

TOOTH-PASTE

Chlorate of potassium in any strength above 20 percent will quickly destroy any of the fungi usually found in the mouth, including the germs of putrefaction. A most commendable tooth-paste is this:

Chlorate of potassium.....	50.0
Precipitated chalk.....	20.0
Florentine orris root.....	15.0
Glycerin	15.0
Thymol	0.2

Mix and make a paste; a little more glycerin may be added if necessary. This not only cleans and whitens

the teeth but stimulates the circulation in the gums, arrests fermentation of particles of food left between the teeth, sweetens the breath and leaves a pleasant taste in the mouth.

TORTICOLLIS

Acute torticollis (inflammatory or transient spasmodic wry-neck) may sometimes be relieved inside of ten minutes by the following method: Put a large handful of crushed capsicum pods in a pint of hot or cold water and let it stand for thirty-six hours. Soak a piece of gauze in this liquid and apply to the affected part, covering the gauze with oiled muslin or oiled silk. This never blisters but nearly always relieves. Chronic cases can be cured only by division of the scalenus anticus (rarely) or of the sternocleidomastoid (usually) and maintaining the head in overcorrection for three weeks.

TRACHEOTOMY

In making a tracheotomy one should avoid making too small incisions, as bleeding vessels can thus be more readily brought to view and hemorrhage more easily controlled. After the operation the inner tube should be removed and cleaned every two hours. And the patient must be watched every moment for the first 48 hours lest mucus accumulate in the tubes and strangulation follow.

TRANSFUSION OF BLOOD

This operation is again coming into vogue, and under the aseptic technic lives are being saved by it. When a patient has bled to unconsciousness, is pulseless and cold, there may be hope of restoring life if the source of hemorrhage has been found and the leakage stopped. The radial artery of the donator is bared and opened and a small glass or aluminum tube, sterilized, introduced

into it and held by a catgut ligature around its end; a little blood being allowed to flow (to determine that the current has been established) the end of the tube is closed and all wrapped in a very hot, moist towel. The basilic vein of the donee is next exposed and opened as for vivisection, the distal end tied but the proximal left open. The end of the vein being lifted out sufficiently, blood is permitted to flow from the tube long enough to be sure all air is expelled, and then (with blood still running) the end of the tube is slipped into the vein and tied around with gut. Blood is permitted to flow for about thirty minutes when the vein and artery are each closed by ligation. The donor's blood will drop from the normal 5 1-2 or 6 million to near 4,500,000 in that time (hemoglobin from 100 to about 70) while the donee's will rise correspondingly.

TRENDLENBURG POSITION: A PRECAUTION

In performing celiotomy for pelvic troubles where the Trendelenburg posture is employed, the incision in the abdominal wall should not be closed while the patient is in that position, as emphysema of the abdominal wall is likely to follow with distressing symptoms. Meinert, of Dresden, has known eight cases of this kind, and Leopold alone has had eight. The emphysema occurs between the peritoneum and muscle (the peritoneum sometimes being easily separated from the muscle, particularly where there has been considerable manipulation in the peritoneal cavity), and in the subcutaneous areolar tissue. It is not harmless, but it increases the rapidity of the pulse, causes considerable pain, and makes the patient restless. It also may extend into the inguinal region, or even, as in one of Leopold's cases, to the axilla. Healing will be seriously interfered with. The trouble

may be avoided by placing the patient in the horizontal position before closing the abdomen. The greater part of air admitted to the belly is thus expelled.

TRIFACIAL NEURALGIA

In the surgical treatment of trifacial neuralgia remember: (1) Avulsion of the distal branches should be the first operation. (2) Avulsion with ligation of the common and external carotid arteries should be second choice. (3) Removal of the branches of the nerve (Lexer) should be the third choice. (4) Lexer's method combined with that of LaPlace, and ligation of the common and external carotid arteries, the fifth. (6) Removal of the ganglion and neurectomy of the distal branches, the sixth. (7) Removal of the ganglion combined with neurectomy and ligation of the common and external carotid arteries, the seventh. (8) Neurotomy or else the injection of osmic acid affords only temporary relief. (9) Plugging the foramina with fragments of bone cut from the neighboring plate will prevent regeneration of the nerves passing through them. (10) The method of Kroenlein is an innovation, having given better results with less deformity, mortality, loss of time, motor paralysis and less risk of loss of vision. (11) Relapse occurs after intracranial operations, but in such cases removal of the ganglion is supposed to have been incomplete. (12) Intracranial operations for the removal of the ganglion should be abandoned because of the high mortality, except in cases in which the condition is desperate and other measures have failed. (Ricketts.)

TUBERCULOSIS: SURGICAL

Tuberculosis from Decayed Teeth.—When glands of the neck are the site of tuberculous enlargement one should not only examine the tonsils, as advised by Prof.

Waugh, but also the teeth. Very often a tubercular peridentitis acts as the cause of the enlargement of the glands, especially those anterior to the sternocleidomastoid muscle. Removal of the buccal irritation will sometimes cure the adenitis, so that a disfiguring operation will not be needed.

Tuberculosis: Genital.—Primary tuberculosis of the genitalia may be found in very young children, Demme having reported cases at seven and thirteen months. Other authors report tuberculous vulvar tumors in a child of two years and ulceration in a child of four and one-half years. Tubal tuberculosis is quite rare, however. Carpenter's method of combined rectal and bimanual examination revealed genital tuberculosis in all cases ranging in age from fourteen months to nine years. In the practice of McNaughton Jones in the youngest patient there was a hard mass in the umbilical and hypogastric regions with the right ovary adherent to it. As regards diagnosis, the most important thing is local examination of the vulva, vagina and portio vaginalis, assisted by a bimanual examination (through the rectum) of the uterus and adnexa under anesthesia; a microscopic and bacteriologic examination of some portion of the affected tissues is desirable, if obtainable, as would be a similar examination of fragments from the uterine cavity after curettage in older patients. The presence of tuberculosis in other organs adds to the probability of the suspected growths being tubercular. The appearance of the ulcers, if present, is similar to that of tuberculous ulcers elsewhere. Much information may be gained by recognition of tuberculosis of the pelvic peritoneum, which almost always accompanies similar disease of the genitals, and which may, according to Hegar, be detected on internal examination of nodules that are almost pathognomonic. These nodules are found chiefly on the posterior surfaces

of the sacrouterine ligaments and frequently the tube has the form of a rosary with very hard nodules. A nodule in the pars uterina is also a fairly reliable sign of tuberculosis.

Tuberculosis: Ileocecal.—Those who have given much study to intraabdominal surgery will quite agree with Hartmann, who says it is not at all uncommon, there being two forms of the disease: (1) Ulcerative caseous tuberculosis, accompanied by pericecal inflammation, sometimes described as the enteroperitoneal form, and (2) hyperplastic tuberculosis, resembling in its aspect and evolution certain strictures of the rectum, formerly known as inflammatory or syphilitic, and now shown to be tuberculous.

Etiologically ileocecal tuberculosis is equally observed in both sexes. The disease seems to present its maximum frequency between the ages of twenty and forty years. Before twenty and after forty it becomes rare. The patient may be affected with lung tuberculosis, but generally to a slight degree, or even not at all. There is, between localized cecal tuberculosis and ordinary tuberculous enteritis, a great difference, the tuberculous enteritis appearing in the late stages of lung tuberculosis. Infection is probably brought about by ingesta, and localizes itself in the cecum because of the stagnation of intestinal contents which favors inoculation.

Clinically the surgical forms of ileocecal tuberculosis manifest themselves chiefly by two kinds of symptoms. Some of the cases exhibit the reaction of the peritoneum and its surroundings, simulating appendicitis. Others are the result of intestinal stricture, and are suggestive of neoplasms, all the more because direct examination almost always reveals the existence of a tumor.

In the enteroperitoneal form the symptoms are those of suppuration, complicated with the evolution of a pulmonary tuberculosis. Exceptionally the abscess bursts into the peritoneal cavity, and death occurs within two or three days.

The hyperplastic form has an insidious onset, with loss of appetite, slow digestion, and vague disagreeable sensations in the right iliac fossa. A tumor can usually be felt; it is smooth and preserves the normal shape of the colon. The disease never retrocedes, and unless operated for, invariably proves fatal. Its average duration is two and a half to three years.

In diagnosis it is often mistaken for neoplasm, but the progress of the latter is usually more rapid, and the tumor is nodular and irregular in outline. The enteroperitoneal form can readily be mistaken for appendicitis. Actinomycosis can only be suspected when the abdominal walls are rigid and board-like.

The treatment of ileocecal tuberculosis is surgical, the abdomen must always be opened. Cases of glandular tuberculosis with subserous nodules, signs of slight localized peritonitis, and without symptoms of lesions in the intestinal mucous membrane, may be cured by simple exploratory celiotomy. But more often a more extensive operation is necessary. It is never necessary to remove the disease in two sittings, as the obstruction is never extensive. It is important to remove with the cecum the glands occupying the ileocecal angle, which are often enlarged and often caseous.

After-treatment is essentially that of tuberculosis elsewhere: outdoor life, good food, and tonics used judiciously.

Tuberculosis: Intraperitoneal.—Late investigations seem to support Lawrence's statements: (1) That intraperitoneal tuberculosis is frequently a local disease. (2) It probably occurs much more frequently in the female than in the male. (3) In a large majority of cases it is primarily visceral and the general peritoneum is secondarily involved. (4) The surgical treatment is rational, sometimes agreeably surprising in results, and again bitterly disappointing. (5) In this, as in many other surgical conditions, early diagnosis

and early operation will bring more certain results. (6) In this condition the greatest obstacle to overcome is the idea that it is a secondary condition. (7) No case of intraperitoneal tuberculosis should be denied the benefits of operation, no matter how extensive, as long as there is no positive pulmonary or pleuritic involvement, for the reason that some apparently hopeless cases fully recover. (8) When there is a tubercular peritonitis, a sequel of tubercular tubes, ovaries or appendix, the primary focus should always be removed. (9) In these tubercular cases the mesenteric glands have not frequently been found involved, and when they are, operation accomplishes very little good. (10) In tubercle of tubes and ovaries the adhesions are usually firm, sometimes, though not usually, very vascular, and not infrequently involve loops of the small intestine; hence the greatest care is necessary to avoid serious injury to the bowel and at the same time separate completely all adherent surfaces and provide complete drainage. (11) Drainage is the factor in recovery, when properly carried out.

Tuberculous Lymphadenitis.—In the management of tuberculous adenitis the internal treatment, and the local, are rather more important than the operative. No one should persist in internal medication and local applications until burrowing abscesses have formed or the glandular substance has broken down and is about to discharge through the skin; for such treatment would lead to disaster: the formation of indolent, discharging sinuses, with danger of systemic trouble from mixed infection; for as soon as the “cold abscesses” open there is engrafted upon the tuberculous soil the staphylococcus, even if not the streptococcus. Hence it is very easy to wait too long, especially as the patient makes little, if any, complaint.

But so long as the tuberculous focus seems limited within the capsule (evidence: non-adherence to surrounding

tissues) it is safe to abstain from surgical interference, often for weeks and sometimes permanently. Non-operative treatment consists of (a) general measures, i. e., increase of food, maximum of out-door life in the sunshine, encouragement of proper elimination by kidneys and bowels (excess of water and saline laxatives but no physic); (b) the administration of drugs calculated to strengthen, notably iron, arsenic and strychnine (the "triple arsenates with nuclein" is an excellent combination), creosote, with small quantities of alcohol just before meals (sweet wines or whisky with glycerin or syrup just before eating causes a patient to take more food than without the alcoholic agent); and (c) local use of either tincture of iodine painted on the affected gland—its absorption aided perhaps by the negative pole of a galvanic battery, 50 to 75 milliamperes—or an ointment of ichthyol in lanolin. Massage, aside from the gentle rubbing in of ointment, must never be permitted; rupture of the capsule of a non-inflamed tuberculous gland is likely to have early pulmonary consumption as a result. As soon as the gland softens, or becomes adherent, it should be excised.

Tuberculous Peritonitis.—We have been taught to believe that simple abdominal section with considerable manipulation of the viscera and evacuation of the ascitic fluid will cure tuberculous peritonitis. But while it is true that certain patients have apparently been cured by such mild procedures, a much larger number have gone on to fatal termination. The mistake has been made of treating a symptom (ascites) instead of the disease. Radical removal of every local deposit of tubercle wherever found is the only certain cure. In a small percentage of cases it cannot be found; here the only resource is irrigation, manipulation and closure. In a larger percentage of cases the lesions are so numerous or so situated that they cannot be removed; here gentle rubbing of the affected surfaces with

gauze may do good. In all cases, whether the local focus be removed or not, the most energetic constitutional treatment must be instituted; forced feeding and tonics do fully as much in abdominal tuberculosis as in pulmonary. But unless the primary seat of the disease is found and the source of trouble removed a guarded prognosis should be given regardless of how much the patient may gain after operation. Medication is the same as that for any other abdominal section during the first few days, and then the same as for phthisis.

Tuberculous Testicle: X-Ray for.—In a late paper Professor W. B. De Garmo, of the New York Post-Graduate Medical School, reports what he believes to be the pioneer case of tuberculosis of the testicle successfully treated by the x-ray. The patient was a robust man, age 56, who had always enjoyed good health. He had gonorrhea twenty-five years previously, but denied syphilitic infection. For the past five years the left testicle gradually increased in size and was the seat of considerable pain. During the last eight months there was gradual decrease in weight. The testicle was the size of an orange, hard, nodular and tender to pressure. After several months' delay the patient consented to removal of the testicle, which was done, and on examination it was found to be tuberculous. About two months later the right testicle became involved. The patient refused to have it removed, and the x-ray was applied. When treatment was begun the testicle was several times its normal size and had the clinical appearance of tuberculosis. One hundred and twenty-six treatments of ten minutes each were given within a period of ten months. A medium tube was used at about 10 inches. The first application relieved the pain. Swelling and tenderness gradually subsided, until at the last treatment the testicle was apparently in a "normal condition." But in testicles thus treated the spermatozoa are rendered sterile.

Surgery of Pulmonary Tuberculosis.—A number of cases have been recorded in which a localized abscess of the lung, of tubercular origin but of staphylococcus engraftment, has been opened and drained, with recovery. But it has remained for Lionel Strutton, of Kidderminster, England, to make phthisis pulmonalis an exclusively surgical disease by removal of an entire lung. The patient, a female, age 28, had definite signs of disease at the right apex; the illness was of four years' duration; in the last year and a half there was a continuous cough with expectoration and night-sweats. There was dulness as far as the third rib, tubular breathing and crepitant râles; but no apparent involvement of the opposite side, so under ether anesthesia an incision three inches long was made, with its center over the third rib, two inches from the sternum; about four inches of the third rib was removed.

On opening the pleura the latter was found everywhere adherent; the adhesions were loosened carefully with the hand as far as the third rib; this portion of the lung was surrounded with a *serre-noeud* and was cut away, leaving a stump of about the size of a five-shilling piece. For the first twenty-four hours the patient was in a condition of collapse. During the next few days there was considerable hemorrhage both from the wound and from the mouth. On the seventh day hemorrhage ceased, but symptoms of sepsis intervened which required a counter-opening in the back, through which a large drainage tube was passed. The wire came away on the eighteenth day and recovery was uneventful. The wound was entirely healed three months later. Soon after this, all cough and expectoration ceased. The excised portion of the lung was tuberculous and contained a cavity. Six months later the patient was reported well.

Surgical Tuberculosis.—In all forms of surgical tuberculosis (bone-destruction, peritonitis, nephritis, sal-

pingitis, etc.) the following plan should be rigidly enforced: (1) The "open-air treatment" should be organized to meet the circumstances and requirements of the particular case. (2) In every case the patient's power of resistance to the disease should be periodically measured by suitable blood examination. (3) When resistance is found low and there is no evidence of an excessive autoinoculation, use should be made of therapeutic inoculations of Koch's new tuberculin in doses that are accurately controlled both as regards their amount and repetition by examination of the blood. (4) In cases where there is evidence of excessive autoinoculation absolute rest, with complete fixity of the diseased part, should be prescribed. (5) When it is evident that the diseased area is circumscribed and cut off from the circulation of tissue-fluids, efforts should be made to improve the circulation through the diseased area. The means at our disposal are fomentations, the use of certain mild irritants, e. g., liniment of iodine, light therapy, general massage and local massage with carefully regulated movements. (6) Operative procedures should be directed to the removal of the dead, inert material, whether pieces of bone or collections of pus, and should be conducted with the most scrupulous aseptic precautions. (7) The most careful attention should be paid to diet and digestion, proper elimination through the alimentary canal being of exceedingly great importance. (8) Remedies proper for pulmonary tuberculosis are to be prescribed with just as much thoughtfulness as in the more acute forms of tubercular disease.

TUMORS

The word "tumor" is loosely used among surgeons to express any sort of enlargement or swelling of a part, whether the result of inflammatory action or not. Strictly speaking a tumor is a new growth, not the result of inflam-

mation or hyperplasia. Most authorities adopt the classification given by Gould's Medical Dictionary—based in great part on the blastodermic origin of the dominant tissue of the growth—as follows:

A. MESODERMIC TUMORS

- | | | | |
|-----------------|---|-------------------------------|-----------------|
| 1. Sarcoma | { | Round-cell | { Large |
| | | | { Small |
| | | Spindle-cell | { Lymphosarcoma |
| | | | { Large |
| | | | { Small |
| | { | Giant-cell | |
| | | Melanotic | |
| | | Alveolar | |
| | | Endothelioma | |
| | | Angiosarcoma | |
| | | Cylindroma | |
| | | Chloroma | |
| | | Psammoma | |
| 2. Fibroma | { | Hard | |
| 3. Myxoma | { | Soft | |
| 4. Lipoma | | | |
| 5. Chondroma | { | Hyaline | |
| | | Fibrous | |
| 6. Osteoma | { | O. durum or O. eburneum | |
| | | O. spongiosum or O. medullare | |
| 7. Hemangioma | { | Telangiectatic | |
| | | Cavernous | |
| 8. Lymphangioma | { | Simple | |
| | | Cystic | |
| 9. Myoma | { | Leiomyoma | |
| | | Rhabdomyoma | |

B. ECTODERMIC AND ENTODERMIC TUMORS

- | | | | |
|----------------|---|--------------------|-------------------|
| 1. Glioma | | | |
| 2. Neuroma | { | N. myelinicum | |
| | | N. amyelinicum | |
| | { | Adenoma | { Tubular |
| | | | { Racemose |
| 3. Epithelioma | { | Carcinoma | { Squamous |
| | | | { Cylindric |
| | | | { Glandular |
| | { | Epithelial cystoma | { C. simplex |
| | | | { C. papilliferum |

C. TERATOID TUMORS OR TERATOMATA

1. Dermoid cysts
2. Cholesteatoma

The treatment of each will be discussed under their distinctive titles.

TYMPANITES

The distressing bloating of the abdomen which follows some intraperitoneal operations and which is so prominent

in peritonitis may frequently be controlled by half a milligram (1-134 grain) of physostigmine every two or three hours. It is claimed by Abbott that the same dose of picrotoxin will have a similar effect.

Alum for Tympanites.—Gaseous distension of the colon is often distressing after abdominal operations. A good treatment consists of dissolving one ounce of alum in half a gallon of warm water and injecting with a high rectal tube.

Ergotin for Tympanites.—To reduce the distressing distension of the abdomen following intraperitoneal operations the hypodermic use of ergotin is advisable. If ergot is given by the mouth it will almost invariably excite vomiting—which will increase the distension. So two drams of the fluid extract may be given by rectum and repeated in two hours; or 1-4 grain of ergotin may be injected into the buttock or thigh—not the arm, as abscesses sometimes follow its use.

TYPHOID SPINE

Inflammation of the joints following typhoid fever has long been recognized as a surgical complication or sequel of that disease, but has only of late been known to be due to infection of the synovial membrane or the bone by the Eberth bacillus—one of the germs which become pyogenic under certain conditions. The knee has been the joint most often involved, but of late it has been shown that the spine may also be implicated; the patient complaining of pain in the back, with its accompanying disability. An intensely neurotic condition develops, with paresthesias, anesthasias, spasm or atrophy of muscles, general weakness—in fact, a condition so like “traumatic spine” or the neurasthenia which follows a severe injury that the condition has usually been regarded as of central nervous origin and the spondylitis overlooked. Indeed, there may be little to attract attention to the bones or

joints of the spine—stiffness and sensitiveness with pain, these being all of the local signs in some cases; but in the more serious ones there may be actual deformity, and examination with the x-ray may show some deposit around the site of local infection. Primarily the focus is limited to the periosteum in most cases, but the interior of the bone may be the *locus minoris resistentiæ* or may become the seat of secondary infection very early in the disease. In the more fortunate cases, treated by proper quietude and supportive measures, the disease disappears without suppuration—a mere typhoid periostitis or osteomyelitis; but in the worst ones pus forms and may cause serious trouble unless recognized and evacuated. When the focus of suppuration can be located, the proper treatment is to open the abscess, curet away the diseased bones and pack with gauze, the utmost care being taken, both at operation and in the subsequent drainage, to maintain the strictest asepsis, so as to prevent the engrafting of a staphylococcus or streptococcus infection upon the minor pyogenic one already present. By such treatment extensive deformity may be prevented. These abscesses have heretofore been confounded with those originating as a tuberculous spondylitis. Internal medication should be supportive, iron, arsenic, strychnine and wine being particularly useful.

ULCERS

Some ulcers become very chronic, especially those of the legs dependent upon ruptured varicose veins. When they are irritable, soothing applications are indicated, oxide of zinc ointment being a favorite with many doctors. Others prefer an ointment of carbonate of lead, the lead being rubbed up with linseed oil; but if the ulcerated surface be extensive and granulations not active, lead poisoning may occur. When the ulcer is indolent various applications have been recommended to promote healing—all

with more or less success—generally less; for these ulcers are very hard to heal without operative treatment—requiring at least curettage.

Bismuth benzoate has been much praised to stimulate the healing process; the ulcer being cleansed by use of hydrogen dioxide, or one in 1000 sublimate, or one in 40 carbolic acid, is dried by gently applying absorbent cotton or gauze (better), the surface is dusted freely with the bismuth, covered with dry gauze and cotton held in place by adhesive strips rather than bandage. Some burning follows the application, but this subsides in a few minutes. The dressing has to be reapplied every day.

Nitric acid is also used to stimulate these indolent ulcers: 10 to 30 drops to the ounce; and sulphuric acid has been likewise employed. When there is too free discharge gallic-acid ointment (which see) has been lauded for many years. When the granulations are exuberant they may be best cauterized by application of a piece of blue vitriol—copper sulphate. Occasionally the best treatment is to scrape away all granulations, after injecting cocaine behind the raw surfaces, and disinfect by saturated solution of potassium permanganate, dry the surface with gauze, cover deeply with powdered boric acid, apply gauze wrung from phenol-camphor, protect with oiled silk and put on a Martin bandage over the leg or arm. This dressing must be changed every forty-eight hours for a long time. When all local (non-operative) measures fail, in persistent leg ulcers the Schede operation should be advised as it frequently gives most brilliant results in cases which have persisted for years. Most careful attention must be paid to building up the general health, if impaired, arsenic being especially beneficial if used for a long time.

Calcium Iodide for Ulcer of the Leg—This remedy has proved curative in ulcers which have for years stubbornly resisted all kinds of treatment. Patients who have

without avail been simply saturated with potassium iodide, in a week or two show clean granulating surfaces, and the ulcers have, in almost all cases, healed up. In all cases the induration around the ulcers soon diminishes or entirely disappears. A few cases of syphilitic necrosis of the nasal bones have derived considerable benefit from its administration and great relief is to be obtained in headaches associated with syphilis. The dose given in all cases is two grains in mixture three times a day, and there does not appear to be any increased advantage from augmenting the dose. Any mild external application, without distinction, seems efficacious; in most cases it is perhaps best to use a mild mercurial or iodoform ointment.

Dusting Powder for Ulcer of Leg—As a dusting powder for varicose or eczematous ulcers of the leg this formula may be tried:

Dry aluminum acetate	32.0
Balsam of Peru	8.0
Borated talcum	40.0

This may be applied freely and covered by antiseptic gauze, cotton and bandage; or gauze strips, paraffined, may be substituted, the powder adhering well to these.

Inflammation of Ulcers.—Chronic ulcers, particularly varicose ulcers of the leg, sometimes take on an acute inflammation, they and the surrounding parts becoming exceedingly painful. A very useful application in such cases is digitalis. A teaspoonful of the dried leaves thrown into a pint of boiling water makes a strong infusion in which gauze may be soaked and applied to the inflamed surface, acting better if covered by rubber tissue. After some hours' treatment by this a kaolin-glycerin paste may be substituted.

Medicines for Ulcers.—In the treatment of ulcers not all of one's attention should be directed to the local measures—internal medication is often of great importance. Chronic ulcers are frequently associated with a "run-down"

condition, an anemia which requires both iron and strychnine. To each teaspoonful dose of the National Formulary "elixir of quinine, iron and strychnine" may be added three or four drops of the official liquor acidi arseniosi; to be taken three times daily. Better still and much more convenient, as well as more effective, are the arsenates of iron, quinine and strychnine, with nuclein. In some cases attended with free discharge, echinacea seems to do much good—a tablet of a half grain of solid extract four times a day being a pleasant mode of administration of such an unpleasant drug. Stillingin, one centigram (1-6 grain), may be given simultaneously.

Syphilitic Ulcers.—Ulcers of syphilitic origin may be well treated by local use of iodoform. After thorough cleaning the ulcerated surface may be covered by powdered iodoform and gauze applied. But as the iodoform is apt to cake, most genitourinary surgeons prefer to use something like this:

Iodoform..... 1.5 (grs. 20)

Oil of eucalyptus 16.0 (oz. 1-2)

Apply on gauze and cover with oiled silk. When the patient must be on the street bismuth subiodide may be substituted for the iodoform, on account of the unpleasant odor of this drug; but it is not nearly so satisfactory as is iodoform which more readily gives up its iodine.

Ulcers of the Leg.—There are few things more trying to the patience of the surgeon than the management of chronic ulcers of the leg, particularly when the patient cannot or will not remain quiet and give the leg the benefit of rest and elevation. For the latter cases the following line of treatment will often be found satisfactory: Inject cocaine solution at several points around the ulcer; when insensitive, thoroughly scrub with brush and antiseptic soap with hot water, and scrape away any hypertrophic granulations present with a sharp spoon and touch the

whole surface with nitrate of silver. The leg is then shaved and washed and a moderately thick layer of warm paste applied to the leg by an ordinary brush, the paste coming just to the margin of the ulcers and not on to it. The composition of this paste (Unna's formula) is:

Zinc oxide	30 parts
White gelatin	40 parts
Glycerin	50 parts
Water	90 parts

Mix, after soaking and heating.

This is to be applied while still warm. The surface of the ulcer is next dried and covered with powdered iodoform, abundantly. A quantity of bichloride gauze is now placed over and around the ulcer and a roller bandage firmly wound around the leg, beginning at the toes and ending several inches above the ulcer. As soon as the gelatin has dried, the patient can be allowed to go about his business. This dressing must be removed on the third day and the ulcer cleaned with hydrogen dioxide, the surrounding surface being washed with soap and water, another coating of the paste applied, and the iodoform gauze and bandage used as before. This mode of dressing must be repeated every third day as long as there is much discharge, but as this diminishes the interval can be lengthened until as much as a week may safely intervene. This treatment is perfectly protective, exerts an even pressure over the leg much more effectively than the old way of applying a rubber bandage, while the paste prevents the septic discharge from coming in contact with the healthy skin. After the first application there is no pain attending the treatment.

Ulcers of the Mouth.—Persistent ulcers of the mouth, not of syphilitic origin, are best treated by burning with stick nitrate of silver, with a saturated solution of potassium chlorate containing a little thymol as a mouth-

wash. The burning may be repeated every two days; but few treatments will be needed. Ulcers which persist in spite of this treatment are (1) tuberculous, (2) syphilitic or (3) cancerous, and demand careful investigation; excision of a small piece of involved tissue, under cocaine anesthesia, is justifiable in suspicious cases, for microscopic examinations.

URACHUS

Cysts of.—In the differentiation of intraabdominal growths a tumor in the midline between pubes and umbilicus must always be carefully examined to exclude a cyst of the urachus. If it has not been discharging at the navel it might easily be mistaken for an ovarian tumor, a fibroid of the uterus, a growth in the mesocolon, or a distended bladder. But almost always there has been some kind of a discharge from the umbilicus; urine, if the urachus be still open into the bladder, a milky fluid, if there be a true cyst of the urachus. When there is a discharge present, it must be identified beyond question, for besides urine and cyst-contents there may be discharged (1) pus from an abscess in (a) the abdominal wall, (b) the fallopian tube, (c) an appendical inflammation, (d) a fecal fistula or (e) some other source; (2) contents of a dermoid cyst, or (3) secretion from a moist eczema of the umbilicus.

UREA: TO INCREASE EXCRETION OF

In many surgical conditions there is a deficient excretion of urea. One of the most highly recommended remedies for this is boldine, the alkaloidal active principle of boldo leaves. This is said to speedily increase the production of urea and expedite the excretion of solids by the kidneys. The usual dose is one milligram (1-67 grain) every three hours, or two milligrams four times a day. It may be prescribed also when there is an insufficient flow of bile.

UREMIA

Symptoms of uremia appearing after operations (particularly those on the kidney) demand immediate and vigorous treatment. Probably the best thing to do is to begin immediately with one milligram (1-67 grain) of elaterin, every hour by mouth and continued until very free watery bowel-movements are obtained; and with it one-half centigram (1-12 grain) of calomel, as this drug in such doses stimulates kidney-action. At the same time nitrate of pilocarpine should be injected hypodermically (dose one centigram, or 1-6 grain) every hour until profuse sweating results. If coma or convulsions occur, hypodermoclysis must be resorted to—one liter (a quart) of normal salt solution to be thrown into the cellular tissue of the breasts or buttocks and repeated in two hours if necessary. One grain of sulphate of sparteine every three hours is highly recommended hypodermically.

URETHRA

Foreign Body in Urethra.—It is not often necessary to make an external urethrotomy to remove a foreign body from the urethra, unless it be beyond the “cut-off” muscle.

Schroeter has been successful with the following simple procedure: If any urine can escape past the foreign body, the outer orifice is closed with the fingers and the patient is instructed to urinate as much as he can, forcing the urine into the urethra until it is greatly distended. The orifice is then abruptly released and the escaping fluid sweeps out the foreign body with it. If no urine can pass the foreign body, he applies a constricting band above it and then injects water into the urethra to distend it from below, compressing the orifice and allowing the fluid to escape suddenly when the urethra has been sufficiently distended by the water.

Hemorrhage from Urethra.—Hemorrhage from the urethra may come from an acute trauma or from the surface of an ulceration. When the hemorrhage occurs in association with an erection the condition is sometimes called stymatosis. When the bleeding point is in the anterior urethra an injection of adrenalin solution may arrest it, especially if an ice-bag be applied to the penis to reduce congestion. In bad cases a large sound may be introduced and the organ bandaged very tightly, thus controlling the bleeding by pressure. When the blood comes from the deep urethra, if injections fail and the loss of blood is serious, an external urethrotomy may have to be made to tie the injured vessel or to control by packing.

Inflammation of Urethra.—Urethritis is almost invariably gonorrheal in character unless directly traceable to a recent trauma. Examination of the discharge, in case of dispute or of doubt, will instantly determine the character of the discharge: Neisser's coccus does not occur in simple urethritis. If found to be a pure staphylococcus infection the treatment will consist in simply keeping the canal clean by injections of saturated solution of boric acid or the application of iodoform powder through an endoscope. Persistent cases may require an application or two of a solution of silver nitrate by an Ultzmann or Guion syringe.

Tuberculosis of Urethra.—It is doubtful if primary tuberculosis of the anterior urethra ever occurs, though numerous cases of secondary involvement have been recorded, and infection from the mouth of the rabbit may follow ritual circumcision. It presents but few points for clinical observation: pain on urination, hemorrhage from the urethra, strictures without preceding gonorrhea or trauma, seropurulent discharge, which may for a long time contain no tubercle bacilli, or may contain them. But the posterior urethra affords a most excellent field for the development of local tuberculosis, the prostatic portion being

especially prone to implication. The most common form is a simple mass of granulation-tissue, but in bad cases ulceration and abscesses may form, with cheesy cavities here and there, associated almost invariably with secondary tuberculosis of the prostate. In some cases mere destruction of granulations by passage of sounds, followed by installations of 10-percent iodoform emulsion daily will effect a cure. In others external urethrotomy is necessary, with curettage of the diseased areas under the guidance of the eye. In the worst cases, associated with tuberculosis of the prostate, a prostatectomy is the only means of cure. Most careful attention must be directed to the building up of the general health, both before and after operative measures.

URINE: IRRITATION FROM

After operations upon the bladder when it is necessary to leave the vesical wound open, there is always great irritation of the skin from the dribbling urine, continuing several weeks. The temptation is to prescribe some drying powder like borated talcum, oxide of zinc or carbonate of calcium—all of which have been so long used in intertrigo; but if a dusting powder be used it will cake, adhere to the skin and crack, itself becoming a source of local irritation and an annoyance to the patient. Better is some greasy application, e. g., carbolized vaseline; frequent washing with a mild soap and warm water followed by an ointment of boric acid and vaseline gives the best results.

VARICOSE VEINS

These are best treated by ligation and excision; or if very bad, on the leg, by the Schede operation or removal of the long saphenous. If the patient refuse operative treatment the part may be bandaged regularly to give comfort and support the weakened vessels. In bad cases a Martin bandage (rubber) or silk elastic stocking may be needed.

As regards hygiene Robin says: The most effective agent to stimulate the flow of blood in the veins is muscular action, so the patient should be made to exercise as much as possible, stopping if there is any pain. When not in motion, he should not stand. Internally, remedies should be given to stimulate the walls of the veins, as tincture of hamamelis, tincture of viburnum prunifolium, tincture of centaurea, aa. part. aeq.; dose, six drops each morning. Potassium iodide will prevent the sclerotic changes in the walls of the veins, and should be given in doses of about a grain twice a day. Locally, the limb should be wrapped every night in cloths wet with Goulard's lotion, or in case this is refused, spread thinly with the following ointment: Potassium iodide, dr. 1; ergotin, grs. 45; ext. nux vomica, grs. 15; benzoinated lard, oz. 1. For the poorer classes the bandage of Velpeau is better than an elastic stocking. If a stocking is used it must rise well above the knee. Massage is advantageous and is most effective after a bath; all hard or tender points must be avoided in this rubbing, lest thrombosis and embolism occur.

A strong solution of potassium permanganate—one to five percent—forms one of the very best applications for varicose ulcers of the leg, whether recent or of old standing. Apply on a cloth (absorbent lint is the best); cloths should be saturated every two to six hours, and the same cloth can be used for several days.

An ointment of one part silver nitrate, two parts balsam of Peru and 97 parts petrolatum is not strictly compatible, but it forms a splendid ointment for varicose ulcers.

VARICOCELE: CURE OF

When operating for varicocele it is far better to make the incision over the external ring, as in herniotomy, than the usual incision in the scrotum. The cord, veins and artery may be pushed out of the opening and the veins

separated from the others and ligated. The operation is much simpler and easier, involves less laceration and hemorrhage, and the danger of embolism, thrombosis and septic infection is greatly minimized. It is wholly unnecessary to touch either the wounds in skin and tunica vaginalis or the cord and veins—finger-infection here being very serious, since the wound must be closed without drainage. It is best sealed with collodion, over which a protective gauze-pad should be placed.

VESICULITIS

Inflammation of the seminal vesicles is generally due to gonorrhea. It may result in stricture of the ejaculatory ducts, and be followed by abscess, atrophy, and degeneration of the seminal vesicles. Ulcers, venereal or otherwise, forming at the mouths of these ducts and finally healing, may by the formation of cicatricial tissue so nearly close the lumen of the ducts as to prevent the free escape of the fluid into the urethra. Treatment is symptomatic and non-surgical except when abscess forms, this demanding incision and drainage in bad cases.

VOLVULUS

This is a form of obstruction of the bowel dependent upon twisting of the gut upon itself or upon its mesenteric axis in such a way as to occlude the lumen. It is found most often in the sigmoid, hence in operating for intestinal obstruction the hand invariably should be first passed to the sigmoid to see that volvulus is not present there. In early operation lies the only hope of cure.

VOMER: FRACTURE OF

Chloroform patient and, if adult, pass little finger through one nostril and plug opposite tightly with iodoform gauze up to and beside fracture; withdraw finger and pack oppo-

site side. In three days withdraw packing and wash out two or three times daily with spray of thymol solution. In children, hemostatic forceps may be used instead of finger to push displaced fragments into proper position.

Great care should be taken to get the nasal septum into exactly the mid-line, as there may be serious trouble later on if this is not done. Besides, if fracture of the vomer is not properly set, deformity may follow.

WARTS

Removal of.—For the removal of warts as well as corns salicylic acid is extremely efficacious. It is best used in the following form:

Salicylic acid	5
Extract of cannabis indica	1
Collodion	60

This is to be painted on the wart or corn at bedtime, with a camelshair brush. In four or five days the growth may be readily peeled off with a knife, leaving a tender but entirely healthy skin at its site. Or, excision may be done, closing cut with collodion.

WICKERSHEIMER'S FLUID

For the preservation of specimens Wickersheimer's fluid is much used, a strong solution for injecting large masses, a weak one for immersion.

Stronger Solution:

Arsenous acid	16
Sodium chloride	80
Potassium sulphate	200
Potassium carbonate	20
Potassium nitrate	25
Glycerin	4000
Wood-alcohol	750
Water	10,000

Weaker Solution:

Arsenous acid	12
Sodium chloride	60
Potassium sulphate	150
Potassium carbonate	15
Potassium nitrate	18
Glycerin	4000
Wood-alcohol	750
Water	10,000

After injection with the stronger solution the specimen is to be put in the weaker and the jar closed tightly to prevent evaporation.

WOUNDS

Balsam of Peru for Wounds.—Balsam of Peru is a much-neglected agent in the treatment of wounded surfaces, especially those attended by suppuration and consequently slow granulation, as operation for fistula in ano. Experience has shown that the balsam has certain properties which surpass those of any other substance at our disposal for the treatment of certain wounds, especially in crushed and soiled tissues. Severe inflammation never develops in an infected wound (like that of a crush in railway work) which has been treated with the balsam in the first twenty-four hours. It is poured freely into the wound and every crevice is filled. It attracts the leucocytes to the spot and has a kind of mummifying effect on the dead tissues, while it mechanically checks the development of microorganisms.

Dry Heat Applied to Wounds.—If after gauze, cotton and bandage have been applied over a wound, especially an infected one, the wound is subjected to a high degree of dry heat for some time, healing will be greatly hastened. If the sun is shining very hot, the wounded extremity or part may be placed so that the sunshine burns it until every trace of moisture is gone; or it may be

placed very near to a hot stove or furnace for some time—even the heat of a Bunsen burner does good but takes longer. In adopting this mode of treatment no special pains need be taken to clean the burned or injured surface; it should not be washed with antiseptic solutions but simply cleaned with dry gauze as well as possible, the surrounding surface being also cleaned without water. Dry bichloride gauze (iodoform is better for this purpose) is applied in several layers—which of course become instantly moistened by the blood or serum—and a thin layer of cotton placed over this, with bandage over all. The dry heat is then applied—a “hot-air apparatus” will not do, as the sweating interferes with the desired desiccation—and the patient told to return in three or four days. Healing is by “third intention” of the old writers: healing under a scab artificially produced. In some cases suppuration is practically prevented.

For Contused Wounds.—The old treatment of rubbing severe contusions with tincture of arnica, etc., has been superseded by, first, a hot bath with free use of soap—the affected part being gently but persistently rubbed with soft soap—then with tincture of green soap (an alcoholic solution of common soap will do), and then careful drying; and, second, the application of dry antiseptic gauze held in place by a bandage not too tightly applied. Next day the soap-bathing may be repeated, and if there be suspicion of infection an ointment may be used, such as

Silver nitrate	0.3 (grs. 4)
Balsam of Peru	6.0 (drs. 1½)
Vaseline	90.0 (ozs. 3)

This is rubbed thoroughly into the skin and the antiseptic protective applied as before. After three or four days the infective process will be either under control or so far advanced as to require one or more incisions. These, if needed at all, should be free ones.

Suturing Wounds.—The skilful surgeon knows how to sew the skin without the use of needle-forceps and still without handling the cut edges with his fingers. By pressing the edges together the needle may be pushed through without any contamination of raw surfaces. Professor Mikulicz, the distinguished German surgeon (just dead), remarked: "Whoever has an opportunity of watching a surgeon operate can generally judge at first glance from his manner of suturing, the degree of perfection which his technic has attained." For it is here that the dexterity of the surgeon most distinctly manifests itself. In spite of the numerous ingenious devices for facilitating the insertion of sutures, none of them surpasses the hand. The surgeon who has learned to apply stitches accurately and rapidly will often be able to shorten materially the period of operation, and thereby greatly diminish the risk of shock, and especially is this necessary in operative work upon the gastrointestinal tract; by the time the intraabdominal work is completed the patient is often so near collapse that a life may be saved by the knowledge of how to suture rapidly. Mikulicz has well pointed out that in the development of the purely scientific part of surgery there is danger of forgetting what might be termed the mechanics of the art.

Treatment of Aseptic Wounds.—It is very hard to induce the average doctor not to "meddle" with a clean wound. Unless he has had practical hospital training and has learned to say "no" positively and firmly he cannot resist his curiosity to see how healing is progressing on the demand of the patient that the wound be dressed. It is extremely difficult to make the average patient understand (and many a doctor, too) that an aseptic wound should never be exposed until the tenth to twelfth day, when the stitches are to be removed; then, if no infection be found, that it should not again be touched for another ten days.

When drainage has been used, however, unless it be of catgut, the dressings must be changed in about forty-eight hours (the outside cotton and gauze much sooner, and often if there be much seepage); and here lies a great danger. For if the greatest care be not exercised infection is sure to occur, and an infection at first dressing is just as bad as a dirty operation. Therefore, when an early dressing is imperative to remove a gauze, tube or silkworm-gut drain, it is necessary (a) that the hands be scrubbed and sterilized as for an abdominal section, or, better, sterile rubber gloves be put on; (b) that the gauze be freshly boiled, or just out of a sterilizer without having been handled; (c) that some one besides the doctor remove the outside dressings, down to the gauze, so that the doctor's hands or gloves shall not be contaminated; (d) that as small a portion of the wound be exposed as possible during removal of the drain, and then the whole wound be quickly covered by the sterile gauze at hand, and (e) that greatest care be taken that nothing touch the surface near the wound. Attempts at "irrigating" or "washing" are especially to be condemned; it is far better to leave a little blood or serum on the wound or skin than to make any great effort to clean them away.

If sutures are to be tied and cut after removal of the drain the scissors must be taken directly from the pan in which they have just been boiled. It is well, also, to have a pair of hemostats boiled in the same pan to be used in pulling out the drain, catching any bleeding point, etc. The patient's hands should be held so that there is no possibility of an involuntary movement contaminating the wound or the doctor's hands; and when possible, sterilized towels should be placed over the bed and patient's clothing before the deeper layers of gauze are removed, in order to insure absolute sterility of the wound.

At the time for removal of stitches there may be one or two little stitch-abscesses—a drop of pus around the stitch from the mild infection of the staphylococcus epidermidis albus, all the rest of the cut being healed. Such being the case all the other stitches are to be cut and removed before the infected one—otherwise the scissors will carry the infection to the other sutures and multiple abscesses follow. Besides, such a wound should not be washed with hydrogen peroxide or other antiseptic, as the fluid will carry the pus to the other stitch holes. The best way is to take a small bit of absorbent cotton on the end of a wooden tooth-pick (or a probe—a detestable instrument by the way) and carefully remove the pus on the surface. If there seems to be a drop or two deeper down around the suture the wound may be gently squeezed from side to side and the pus wiped away. A little boric acid sprinkled on the surface and a little plain gauze dressing for a few days will be all that is required generally; but it is well to make the second dressing in four or five days instead of ten, as in a perfectly healed wound.

Occasionally there will be found more than a little pus around the stitches, three or four being infected and the surrounding skin a little reddened and tender. Here is a mild staphylococcus infection of the wound and it may be serious even, though mild. It seems to be purely superficial and all that is needed is to remove the stitches, clean the surface as thoroughly as possible, and apply bichloride gauze 1:2000. In two or three days the dressings should be removed, and if the trouble be no better the treatment appropriate for infected wounds in general must be adopted.

Treatment of Infected Wounds.—Every wound received accidentally is an infected one. Wounds inflicted by a surgeon should, theoretically, be aseptic, free from infection; but unfortunately many are not so because of (1) dirty fingers, (2) unclean instruments,

(3) non-sterile gauze, (4) failure to drain when (a) the patient is very fat, (b) there is much oozing, (c) dead spaces have been left by unskilful suturing or (d) the skin was not properly prepared, so that stitch-abscesses have formed with subsequent general infection of the wound.

The first principle of treatment of an infected wound is free drainage. Therefore contaminated wounds should not be closely sutured, save in the scalp where the excessive vascularity permits healing to occur more speedily than elsewhere. If closed without drainage, extensive suppuration is almost certain to occur—often with disastrous results: erysipelas, septicemia, lockjaw.

1. *Simple Incised Wounds.*—No amount of scrubbing, irrigation or application of antiseptic agents can transform an infected wound into a sterile one, which may be closed completely. Nevertheless efforts at attaining “near asepsis” should be made, varying according to the character and location. When the wound is a clean cut, as from a razor, sharp knife, sickle or other weapon that is not presumed to be swarming with bacteria, though not surgically clean, the proper treatment is to scrub the surrounding surfaces and the edges of the incision with soap and water, then wash with alcohol for a half minute and finally apply gauze saturated with solution of bichloride of mercury, 1 : 2000, or phenol, 1 : 40; finally flushing the wound itself with the sublimate or phenol solution.

In the absence of these agents oil of turpentine makes a fairly good antiseptic agent.

A wound thus prepared is in fairly good shape for closure. Very small wounds may be closed without drainage, as may also practically all cuts about the scalp and face. But in every other part of the body some kind of drain must be inserted. In many instances, if hemor-

rhage is completely controlled, two or three strands of catgut may be pushed to the depths of the wound at one or two places (according to size of cut) and left projecting through the skin; if there be much oozing or the cut be deep it is better to put in a little strip of gauze in one or two places.

For this partial closure of an infected wound silkworm gut is the ideal suture, except for wounds of the face and scalp, where 10-day chromicized catgut No. 1 is to be preferred.

When the wound has thus been cleaned, closed and drained, it should be covered by several layers of gauze, preferably wrung out of the sublimate or phenol solution; a pad of absorbent cotton applied; and a bandage so placed as not to press tightly upon the wound, as this would interfere with the free drainage desired.

The closure of such wounds by collodion cannot be too strongly condemned. The application of dusting powders, like iodoform, bismuth, etc., is also highly objectionable. Such wounds should be dressed on the third or fourth day. The gauze removed, the wound-surface is first carefully inspected, and if found free from inflammation or much discharge, the drains are withdrawn by sterile forceps and the surfaces quickly covered with gauze, without handling or washing. If there be much discharge the surface must be cleaned by gently wiping with clean gauze or cotton and the antiseptic dressing applied. If inflammation of a severe degree be deemed impending some of the sutures may be cut and the wound permitted to gape. In some cases the wound should be inspected again in forty-eight hours.

Badly Lacerated Wounds.—The method of cleaning a badly lacerated wound is the same as that of the simple wound except as to the management of the wounded surfaces themselves.

If there be grease and much dirt in the wound it is a good plan to clean it out with gasolin, followed by 65-percent alcohol and then 1 : 2000 sublimate solution. All scraps of injured skin, muscle, etc., which are so injured as to be certain to die must be trimmed away with scissors—leaving them only makes infection worse and delays healing many days.

It is in these deep, lacerated wounds that antiseptics like iodoform do good. A very useful preparation is

Camphor39 parts

Phenol21 parts

Liquid petrolatum.....40 parts

This may be poured into the wound freely, the excess being permitted to run into the gauze, which is applied over the hole. It is especially valuable in wounds involving joints.

Or if the bone be injured it is usually better to fill the depths with iodoform and cover with 10-percent iodoform gauze.

Sometimes the wound may be partly closed by stitches—patients prefer to have it so. But often it is best just to pack the cavity loosely with sterile gauze.

This kind of wound should be dressed in forty-eight hours, or sooner if the gauze and cotton become saturated with serum and pus or if high fever develop. At the first dressing it is best not to disturb the depths unless there be fragments of tissue to remove or necessity for providing freer drainage.

At the second or third dressing wound-secretion will be abundant. If putrefaction is going on there will be a disagreeable “stinking” odor, and it may be necessary to trim out dying tissue and pour in a considerable quantity of liquid phenol (95-percent carbolic acid), almost instantly neutralizing it by pouring in pure alcohol. Then the dressings are applied as before.

After a few days the amount of discharge may be very great, from a large wound, so great that the surgeon desires to lessen it. For this purpose may be used

Resorcin 1 part
Boric acid.....20 parts

Apply freely to all parts of the infected surfaces and cover with gauze and cotton.

The practice of covering the dressings of these wounds with rubber tissue or oiled silk cannot be too severely criticized: such "protective" simply adds to the capacity of the bacteria to multiply.

In some cases, when granulation seems to be delayed too long, it is good practice to cover the wounded surfaces with a few layers of bichloride gauze held in place by strips of adhesive plaster around the edges and place the patient where the wind may blow over the sore; or in winter to place the patient near a fire so that by evaporation of the watery part of the discharge the process of nature's "healing under a scab" may be simulated.

After granulation has been well begun the less the surface is disturbed the better. Dressings should be changed only when becoming foul; and the discharges must be merely mopped away in the gentlest manner possible—all water, hydrogen dioxide, sublimate solution, etc., should be banished, save for cleaning the skin contiguous to the wound; and as a rule the less that is disturbed, also, the better. Plenty of clean gauze and cotton, with a loose bandage, and perfect quietude, will now do more than all the antiseptics made. It is hard to make the average nurse leave such wounds alone—she invariably wants to "do something," and not seldom the patient and the doctor also. "Blessed is he who has learned to do nothing well."

(3) *Punctured Wounds*.—Punctured wounds are extremely dangerous, since they are always infected and

do not by their nature permit drainage without enlargement by the surgeon. Penetrating wounds of the abdomen are particularly serious, and the invariable rule should be to enlarge and explore them or to make a median section if viscera are known to be injured.

Every penetrating wound of any great magnitude should be treated by thorough cleaning of the adjacent skin and wide incision to the bottom of the original injury, however deep it may be. Then, unless some internal organ or delicate tissue prohibit, the surface may be cauterized with pure phenol, followed in half a minute by pure alcohol. Before this is done, however, careful search should be made for foreign bodies if the nature of the accident is such that particles of clothing, dirt, splinters, etc., may have been carried into the depths, and the incision partially closed by sutures so introduced as not to interfere with free drainage.

The only exception to this rule of treatment is in gunshot wounds of the lung; and rarely in shot-wounds of the brain.

(4) *Badly Contused Wounds*.—When large surfaces have been badly bruised without apparent destruction of the deep structures the best management is to clean the skin with 65-percent alcohol (the virtues of the “old-fashioned” tincture of arnica are ascribable to the effect of its alcohol) and then cover with several layers of gauze, either dry or saturated with the mixture of camphor and phenol above mentioned.

When there is much pain from the bruising another phenol combination may be employed, and which has the following composition:

Chloral hydrate.....	1 part
Phenol	1 part

Mix in a mortar sterilized by boiling and keep in a bottle similarly cleaned. Gauze or clean flannel may

be saturated with this and applied to the sore. It is both antiseptic and anodyne.

Such a wound ought to be redressed in forty-eight hours in order to see that the deeper tissues are not sloughing. As soon as it is apparent that sloughing is sure to occur it is best to open the wound freely, in several places if necessary, to permit early and free drainage. By this measure one may often prevent a deep slough and a long, tedious period of suppuration.

If in spite of the most careful antiseptic treatment constitutional symptoms arise the treatment for the particular kind of sepsis must be instantly adopted, i. e., staphylococcic, streptococcic, saprophytic, etc.

Post-Operative Complications

Postoperative Cystitis.—One of the most annoying symptoms after operation, requiring frequent catheterization, is the irritation of the neck of the bladder commonly called "cystitis"—though as a matter of fact the trouble only rarely becomes a true inflammation of the bladder. But an infection of the whole bladder may occur—a matter of greatest import. Hence the necessity of the greatest care in catheterization.

Prevention.—The nurse must be instructed to boil the catheter each time before its introduction, and to scrub carefully her hands before taking the instrument from the boiler—in doing which the fingers should touch only that part which is *not to go into* the bladder. A small, smooth, glass tube is often preferable to the rectal or rubber catheter, but care must be taken that it is not broken while in the urethra. Of importance equal to that of sterilization of instrument and cleansing of hands is that the meatus be carefully exposed and cleaned immediately before introduction of the catheter. If the patient will permit, 65-percent alcohol should be

used, on a little gauze or absorbent cotton, for mopping the urethral orifice, but many women protest so strenuously, because of the smarting it produces, that it cannot be employed, in which case 5-percent carbolyzed water must be substituted.

But sometimes, in spite of all these precautions, infection does occur; or as a result of trauma, or of too long retention, bladder irritation does arise. What then is to be done?

For Acute Cases.—For relief of the intense suffering opiates sometimes must be given; the phosphate of codeine hypodermically in doses of seven centigrams (one grain) as often as needed being best, since it interferes less with peristalsis and the secretions than any other alkaloid of opium. Rest in bed during the acute stage is absolutely imperative.

One of the most valuable of all drugs used for cystitis is salicylate of phenol (salol). This consists of about 65-percent salicylic acid and 35-percent phenol, is decomposed slowly in the intestine by the pancreatic fluid into its original constituents, and is eliminated through the urine as urate of salicyl, though if given in large quantities some seems to pass into the bladder unchanged. In 5-grain doses every three hours it effectually prevents decomposition of the urine in the bladder and keeps it from becoming alkaline. It cannot be continued very long on account of producing phenoluria. Whenever the urine becomes smoky, boric acid should be substituted for a few days, thus:

Saturated solution of boric acid 192.0 (ozs. 6)

Tincture of hyoscyamus 64.0 (ozs. 2)

Directions: One tablespoonful every six hours.

The patient must be put on a milk (or liquid) diet for some days and directed to drink as much water as possible.

Irrigation of the bladder, during the acute stage, may be practised, a saturated solution of boric acid being excellent, or one-half of one percent (1 : 200) formaldehyde solution may be tried—in each instance leaving a little of the solution in the bladder. The irrigation may be made each time the catheter is used, if catheterization is still continued. As a rule, however, the cystic irritation appears some days after discontinuance of the use of the catheter, in which case irrigation should be ordered twice daily.

Chronic Cystitis.—In spite of the most energetic treatment, however, the irritation of the bladder may persist for months.

Probably the most satisfactory remedy is lithia; it may be given as an effervescent tablet in a glassful of water three times a day for long periods; or the benzoate of lithium may be used in doses of one or two decigrams (1 to 3 grains) every 4 hours during the day until the stomach rebels.

If there is much annoyance from having to urinate at night, 2 grams (grs. 30) of bromide of potassium with a teaspoonful of tincture of hyoscyamus may be ordered at bedtime.

To some patients arbutin (from uva ursae) in doses of one centigram (gr. 1-6) four to six times a day brings relief. Others are benefited by half-gram doses (grs. 7 1-2) of salicylate of phenol four times a day.

Extreme cases demand irrigation of the bladder with a saturated solution of boric acid three times a week; after a few washings it is well to inject a dram of fluid extract of hydrastis in two ounces of water, at the end of an irrigation, leaving it in the bladder. As a rule, however, the less local treatment the better in the end. Patience—and two quarts of water drunk daily—will do much toward cure.

For internal use in chronic cystitis this formula is highly praised:

Venice turpentine.....	5.0 (grs. 75)
Castoreum	2.0 (grs. 30)
Camphor	4.0 (grs. 60)
Calcined magnesia.....	sufficient

Make into 40 pills. Directions: Three to six pills daily.

Briefly summarized, other treatment is: Remove any discoverable source or sources of irritation which act through the medium of the urine; also any mechanical source of vesical irritation should receive appropriate treatment.

The urine should be rendered bland by the use of a milk diet, the ingestion of considerable quantities of water, the administration of potassium citrate if too acid, or of boric acid and phenol salicylate (salol) if alkaline.

Pelvic congestion should be relieved by hot vaginal douches, placing the patient in the knee-chest position, and the correction of constipation.

The inflamed cystic membrane may be relieved by the administration of santal-wood oil, copaiba or creosote by mouth, or injections of boric acid, carbolic acid, or nitrate of silver in suitable strengths.

The general health should be improved by tonics, and so on.

Postoperative Delirium.—Some hours after an operation, when the patient ought to be clear-headed, delirium may appear. This is generally of mild degree and may depend upon

1. The effects of the anesthetic.
2. Mild infection.
3. Prolonged abstinence from food.
4. Absorption of iodoform.

1. When postoperative delirium is due to the anesthetic it usually is present as soon as the patient awakens, though rarely it is not noted until the day after the operation. It is more liable to follow ether than chloroform, and is not at all infrequent after the use of the hyoscine-morphine form of anesthesia, especially when an impure scopolamine is substituted for hyoscine. It subsides in a few hours, or at least as soon as the bowels have been moved freely, and need not, therefore, occasion any special anxiety.

2. Delirium arising from a mild infection, however, is a quite serious matter, if persistent. It is most likely to appear on the third or fourth day after operation, and if the infection be severe instead of mild, may be regarded as a most unfavorable sign, since it often is but the forerunner of the fatal termination of the sepsis. Upon its appearance the most energetic measures must be instituted: thorough purgation followed by sustaining remedies, and the most careful inspection of the wound with active work to render the injured surfaces innocuous by perfect drainage, cleanness of dressings, etc.

In the worst cases a low, muttering delirium replaces sleep at night; in which cases one gram (grs. 15) each of potassium bromide and chloral hydrate may be given in 4 ounces of starch water by rectum at bedtime. This will insure a good night's rest and the patient often awakens quite refreshed and clear of mind. The curative treatment is purely eliminative: purgation, diuresis and diaphoresis by proper agents, but above all, drainage. The prognosis is always grave.

3. The delirium of hunger is, of course, most likely to be present after operations on the stomach and intestines, when only rectal feeding is possible for some days, though it may follow an operation when there is long-continued suffering and prolonged liquid diet. If not

recognized and corrected, melancholia or even acute mania may develop, the mental equipoise being lost for a long time. Usually the mental disturbance disappears spontaneously as soon as solid food is given in sufficient quantity to supply the good red blood essential to clear cerebration. It is needless, perhaps, to say that the only treatment consists in stimulation and nourishment.

4. Iodoform delirium was quite common when it was the custom to pack all septic cavities with iodoform gauze. Now most surgeons use this form of gauze only to drain the pelvis (as after vaginal hysterectomy), to fill tuberculous cavities, to drain the uterus and to tampon an appendical abscess; so iodoform delirium is not so frequently seen as it was some years ago. As soon as delirium is noted in any case where iodoform has been employed a change in the character of the dressing must be promptly made, and especially if the urine show elimination of iodine. The delirium will commonly subside in a few hours after removal of the cause; but in rare instances recovery is deferred for a long time.

Postoperative Erysipelas.—Erysipelas may appear in a wound (1) by reason of contamination at time of injury—as in stab-wounds of the belly, (2) by imperfect efforts at cleaning the hands of operator or assistants, and (3) by infection during a change of dressings.

It is claimed that transmission of the pathogenic bacteria from one part of the body to another through the circulation is possible, but it is extremely doubtful: very severe erysipelas may be present on the face, yet a wound of the foot heal by primary union. The cause of the trouble is the introduction into the wound of the streptococcus pyogenes.

The trouble may make its appearance at any time from the fourth to the eleventh day. Usually the patient seems to be doing well until the fourth or fifth day (or

later), when headache and general discomfort come on, with coated tongue and loss of appetite; and the site of injury which up to this time has been free from any great pain suddenly gives a sensation of tension, smarting and tenderness. A severe chill soon follows (or in extreme cases may be the first symptom) with sudden rise of temperature to 104° or 105°F . Associated with this rise in temperature there will be nausea and often vomiting, without other signs of peritoneal infection (tyimpanites, etc.), and sometimes also a mild delirium.

If the wound be examined at the beginning of the trouble—as after the chill—it will be found that instead of being perfectly clean and free from irritation, as an aseptic wound should be, there is a beginning crimson blush along the wound-margins, with slight swelling. A little later there may be considerable edema of the skin, which often assumes a purplish hue, and extension of the area of redness, which is sharply defined from the unaffected skin; and still later small bullæ may form.

In the meantime the general condition remains bad: high fever, great uneasiness even to delirium, diminution of urine, with occasional albuminuria. If the wound is not promptly opened and thoroughly drained, typical streptococcic septicemia develops and death may occur, from pyemia or general exhaustion.

But if the infection is quickly attended to, the symptoms gradually subside and in from six to ten days there is a satisfactory decline in temperature, the tongue cleans, the appetite returns and convalescence is assured.

During the favorable change the local symptoms also improve: the redness and edema gradually disappear, suppuration is established and desquamation occurs—the streptococcic infection with general sepsis has been superseded by a local staphylococcus infection, to be followed by healing by granulation.

In very bad cases, when deep cellular infection has occurred, there may be sloughing of considerable tissue, with consequent long-delayed healing. In the most virulent type large areas of skin and deeper tissues become necrotic—usually followed by death.

In one case under my care the entire uterus, the vagina, all of the bladder excepting a very small portion between the ureters, the perineum, and the rectum well up into the sigmoid, all sloughed away; yet the patient is still alive.

Treatment must be both local and constitutional; and both must be energetic. Here the "therapeutic nihilist" loses his patients; the man who is a "doctor" as well as "surgeon" saves his.

The first indication is to cut the stitches, if any, clean the wound and loosely pack it with antiseptic gauze in such way as to secure freest drainage. Probably the best local antiseptic is creolin: 8 grams to the liter of water (or one dram to the pint); the dressings to be kept saturated with this.

On the next day after discovery of the infection, if it is seen that the disease is inclined to spread, a little of a 2-percent solution of cocaine may be injected into the cellular tissue a little beyond the infected area, on four sides; this to be followed by injection of a 2-percent solution of phenol—about 15 minims to be used in each of the four injection-points, but the position of the needle so changed that not more than 5 drops are left in any one place. This injection may be repeated next day, in larger dosage, if the erysipelatous blush has extended.

Later, when itching and burning are annoying, 10-percent ichthyol ointment mixed with extract of belladonna may be applied, using lanolin as the vehicle. It not only allays irritation but seems to exert a salutary effect on the course of the disease.

In the very bad cases, when there is deep cellular inflammation in the tissues surrounding the wound, it is imperative not only to cut the stitches and drain the wound but also to make numerous free and deep incisions into the edematous tissues; these permit escape of the infected fluids and allow the antiseptic solutions to reach many foci of infection. Rarely the application of a hot charcoal and phenol poultice or the use of the cataplasma kaolini, U. S. P., for a few hours, followed by the creolin solution, seems to be of advantage in these phlegmonous cases.

Internally the best manner of combating the trouble is to give 2 decigrams (grs. 3) of quinine sulphate with 5 centigrams (gr. 5-6) of codeine sulphate every 4 hours, in capsule; or if vomiting is severe, codeine phosphate may be given hypodermically with quinine bisulphate (using 4 decigrams, or grs. 6) every six hours. Pilocarpine nitrate must be alternated with this, either by mouth or hypodermically, until profuse sweating occurs. One centigram (gr. 1-6) may be given by mouth every 4 hours; or half this quantity subcutaneously.

After the first twenty-four hours this line of treatment is to be discontinued and a good saline laxative given. After the bowels have been moved freely, if fever continues high, half a milligram (gr. 1-134) of aconitine may be given every hour until the pulse becomes soft and the temperature drops; and then one every 4 to 6 hours as indicated. The phosphate of codeine may be continued as often as needed to keep the patient comfortable.

In extraordinarily severe cases a few doses of Marmorek's antistreptococcus serum may be injected, though it is of doubtful value as now prepared.

When delirium is prominent and sleep disturbed an enema of one gram (grs. 15) each of chloral and potassium bromide in a cupful of starch water may be given

at bedtime and repeated in one hour if needed. It not only allays nervousness and promotes sleep but also arrests vomiting, if present.

Hyoscine hydrobromide also checks the tendency to delirium: dose, one milligram (gr. 1-67) every 4 to 6 hours.

If the patient is very weak, stimulants are indicated, used carefully; egg-nog, milk-punch, and sherry, with egg, being particularly beneficial. When the heart seems inclined to fail, strychnine sulphate is indicated, in doses of two milligrams (gr. 1-34) hypodermically. And when the urine is scanty as well (from weak heart chiefly), sparteine sulphate is to be given: dose, one decigram (grs. 1 1-2) every three or four hours.

If extreme weakness should come on, with tendency to heart-failure, camphorated oil may be injected—10 drops every four to six hours.

With all of this, forced feeding is essential, especially in the weak and debilitated. In many instances it is advisable to use nutrient enemata as often as every six hours until the patient has been carried past the critical point.

During convalescence a tonic treatment is to be instituted, with a mild laxative at bedtime.

Postoperative Insanity.—While most cases of postoperative delirium terminate quite soon either in death or recovery, a few linger on until a true postoperative insanity is present. And occasionally an acute mania follows the operation very speedily. Sometimes, too, the mental depression preceding and following operation deepens until the victim becomes first neurasthenic and then melancholic.

It is a peculiar fact that the severity of the operation has no bearing upon the development of postoperative insanity (or postoperative neuroses), some of the worst cases following insignificant surgical measures.

Without doubt most cases of insanity following operations occur in patients predisposed to this form of mental disorder, who were upon the border-land of alienation prior to operation. But it is very hard to convince the laity that the insanity is not due to the operative work alone. In this class of cases the anesthetic is probably the disturbing element.

In most instances, however, the delirium at the outset of the trouble is accompanied by a comparatively slight rise of temperature, showing that the mental disturbance is clearly due to a mild form of sepsis.

Perhaps the worst cases are those in which the delirium waxes into an acute mania—requiring removal to an asylum—but even then a large proportion can be restored to health.

While of almost equal import, melancholia is, fortunately, not so common. It is prone to be associated with suicidal impulses; and many deaths have been recorded from this cause. Hence at the very first appearance of severe mental disturbance in the patient a constant attendant must be provided.

The treatment does not vary from that of insanity from any other cause: Good food, free elimination, perfect tranquillity, isolation if indicated, and judicious use of tonic remedies such as strychnine, iron, etc. An exceedingly useful combination in these cases is the following:

Valerianate of zinc.....	1.5 (grs. 20)
Valerianate of quininé.....	1.5 (grs. 20)
Valerianate of iron.....	1.5 (grs. 20)
Phosphate of codeine.....	0.2 (grs. 3)

Make into 20 capsules. Directions: One capsule one hour after each meal, with a mild cathartic at bedtime.

Chloral hydrate will be found one of the best hypnotics in most of these cases.

Postoperative Jaundice.—Jaundice following operation may be due to

1. Trouble with biliary tract.
2. Septic infection.
3. Acute yellow atrophy of liver.
4. Jaundice unrecognized before operation.

1. From the first to the third day after a perfectly aseptic operation jaundice may appear, especially if there has been much vomiting; a jaundice accompanied by the presence of bile in the urine and other symptoms of cholecystitis: "catarrhal jaundice." This may be due to the anesthetic, though how chloroform or ether may set up an acute cholecystitis is not explainable. Possibly latent trouble in the gall-bladder may be aroused by the vomiting from the anesthetic into making itself recognizable; or it may be the trouble is due to simple biliary retention by reflex irritation.

This variety of jaundice is of benign character, disappearing in a few days—in from six to ten days—after free bowel-movements have been secured.

The best treatment is a half centigram (gr. 1-6) of calomel every half hour until 10 or 12 doses are taken; followed by a bottle of citrate of magnesia or a good dose of other saline laxative. Then a few days on sodium phosphate, t. i. d., and a light diet will complete the cure. But the patients who suffer from postoperative "catarrhal" jaundice should be told that there may be trouble in later years from a gallstone, unsuspected before the operation, which was the cause of this attack of jaundice by being temporarily driven into the gall-duct by efforts at vomiting.

2. More often, however, the yellowness of the skin is dependent upon septic infection. This darkening of the skin, however, does not appear later than it does in the simple, catarrhal form, commonly not until the sixth to

twelfth day. It is especially likely to occur in connection with septic pneumonia; and when it so appears it is to be regarded as an indication of a fatal termination. In most instances other signs of sepsis will be present and the yellow skin be of minor importance.

The treatment is, naturally, that for septicemia in general: eliminative and supportive, with absolutely perfect drainage of wound if possible.

3. Acute yellow atrophy of the liver is a condition which very rarely follows the prolonged use of chloroform, the theory of its production being that the chloroform is retained in the liver in large quantities, combining with the lecithin and cholesterin therein present. Pregnant women, past the fourth month of gestation, are more often affected than any other patients. It may occur as the direct result of sepsis, but cases have been reported without septic infection. By some it has been believed to occur only in patients suffering from syphilis; but two of my cases were in non-luetic subjects.

The trouble begins with continued nausea and other signs of gastric irritation, icterus making its appearance on the third day or later; and by the time the skin becomes quite yellow the patient is semicomatose with restlessness (i. e., stupor with delirium) and even mild mania may be present. Soon after this, convulsions may appear and fatal coma supervene. Recovery is exceedingly rare; though a few cases have been known to present the typical symptoms of jaundice, marked diminution of the liver-dulness, pain in region of liver, bloody vomiting, bloody stools, nose-bleed, stupor, subnormal temperature, etc., and yet not end in death. Jaundice may be very pronounced; yet in cases of speedy dissolution there may be time for only a slight change in color. The spleen is usually enlarged. Hemorrhagic ecchymoses in the skin have been noted.

Treatment consists in thorough evacuation of the bowels followed by large doses of the phenolsulphonates (sulphocarbolates) of zinc and sodium, naphthalin or salicylate of phenol (salol) every hour or two. Nutrient enemata are of importance. Diuretics are especially indicated. Small doses of calomel (half a centigram, or gr. 1-6) every hour are highly praised. For the restlessness gram-doses of sodium bromide either by mouth or rectum, prove most satisfactory. When stupor becomes marked, hypodermoclysis is to be employed: one liter (quart) of normal salt solution to be injected in the buttocks or breasts twice daily.

4. It is a peculiar fact that sometimes the existence of jaundice is not suspected until the first incision is made. Then the intense yellowness of the fat and the tendency to bleed excessively shows that icterus is present, though the discoloration of skin and conjunctiva had not been sufficiently decided to attract attention. While this condition of affairs is not strictly a postoperative jaundice, the friends of the patient will so regard it with anxiety, because the yellow color soon becomes intensified.

So far as the surgeon is concerned it means chiefly more care in hemostasis. Not only is there great tendency to bleed during the operation but oozing from the wound may give trouble for days afterwards; notably so when drainage is practised. To check this, 4 grams (grs. 60) of calcium chloride may be given by rectum three times a day until the tendency to bleed is arrested. To the wound itself a solution of antipyrin (1:50) may be applied freely; but tight packing generally controls the oozing.

Postoperative Pain.—One of the principal objections against operative treatment, on the part of patients, is the pain which is presumed to follow surgical work. With the wide adoption of hyoscine-morphine anesthesia this will, in great measure, pass away, because this form of surgical

anesthesia gives many hours of perfect comfort after the patient leaves the operation-room. But when ether or chloroform is used there is a period of some hours during which there is often much suffering.

The tendency of most surgeons is to use morphine hypodermically freely for this postoperative pain—entirely too freely in many instances. There are cases in which it is demanded; but in abdominal surgery it is objectionable, first, because it increases the tendency to vomit and second, because it checks the secretions and arrests peristalsis. Of course, when there is a wounded intestine (as in appendicitis) and adhesions are desirable, morphine must be given; not so much, however, to arrest pain as to prohibit peristalsis.

In other cases the milder and far less objectionable codeine may be used, the rule being to inject one grain (Gm. 0.07) of the phosphate, and repeat it in one, two or three hours, as needed, to make the patient comfortable. The phosphate of codeine is preferable to the common sulphate because it is more freely soluble in water than any of the other.

To quiet nervousness, an enema of 1 gram (grs. 15) each of potassium bromide and chloral hydrate is far superior to any opiate.

Postoperative Pulmonary Embolism.—Thrombosis and embolism are more common after operations in the pelvis than after operations in any other part of the body. In a *rèsumè* of 7130 gynecological operations Schenck reports 48 cases of thrombosis. The symptoms are as follows: The attack is characterized by precordial distress, severe pain and dyspnea, associated with quickened pulse; the patient has an extremely anxious expression, gasps for breath with the aid of all the auxilliary respiratory muscles; the face becomes cyanosed; cold, clammy sweat occurs; the mind remains clear, as a rule, and death

occurs in a few minutes, in spite of energetic stimulation.

Postoperative Shock.—Shock immediately following operation depends upon:

1. Excessive hemorrhage.
2. Too much chloroform or ether.
3. Injury to important nerves.
4. Fear of death.

Theoretically there is a difference between "collapse" due to loss of blood and "shock" dependent upon some tremendous depressing influence upon the nerve-centers; practically there is none.

The first variety is characterized by loss of pulse, by gasping, by paleness and clamminess of the skin.

The second form is recognized by disturbance in respiration, by irregular or imperceptible pulse, by coldness of extremities, and by widely dilated pupil.

The third is distinguished by a peculiar lividity of the face, pinched expression, quickened and shallow respiration, and the peculiar restlessness which so often immediately precedes death in one who is partly conscious.

In the first form, especially, and in the second also, sometimes the evidences of shock appear without warning. Everything seems to be progressing well during operation, when suddenly an assistant exclaims, "The patient is not doing well"—and operation has to be brought to a hurried end in order to prevent death upon the table.

In other instances everything may have gone well at operation, with considerable anxiety as to shock because either of excessive loss of blood or prolonged and serious operative work, and a little while after the patient has been put in bed the pulse becomes thready, the respiration shallow and irregular and the extremities cold—a condition extremely common when the anesthetist has been too free with the chloroform, and, in less degree, with ether. With

the adoption of the hyoscine-morphine form of surgical anesthesia shock is practically eliminated, save that form dependent upon excessive blood-loss; even the severance of huge nerve-trunks does not change the frequency of pulse or of respiration as it does under the older forms of anesthesia.

Prevention.—The most important prophylactic of shock, then, is the selection of the anesthetic. If a child is to be operated upon, if the work is to be of only short duration or if the subject is of advanced age, chloroform is to be selected. If the operation is upon some other who is not a fit subject for hyoscine-morphine injection, ether is to be preferred. But whenever possible, two doses of the hyoscine-morphine injection should be given, supplemented at the proper time by a little cocaine locally or the inhalation of a few drops of chloroform or ether; or in proper cases three full doses of the anesthetic tablet may be employed, with excellent anesthesia and surprising freedom from shock, except such as may possibly result from loss of blood.

The next consideration is conservation of the strength of the patient. If there be extreme weakness and the general condition may be improved by waiting it is better to put off the operation until proper treatment may be given. Entirely too many patients weakened by prolonged suffering are admitted to hospitals on one day and subjected to operation the next. Forced feeding for three or four days, with injection of 2 milligrams (gr. 1-34) of strychnine every six hours, will do much to ward off shock. The use of an ounce of whisky a few hours before operation is a good thing in some cases. With the hypodermic form of anesthesia, too, the patient, if extremely weak, may be given a little food two hours before the first injection, so that the weakness of fasting is not added to that of disease and operation.

Treatment.— (1) The treatment of the first kind of shock differs in marked degree from that appropriate to the others. Here the use of hypodermoclysis is to be commended: the injection of a liter (quart) of salt water under the skin soon restores the amount of blood-serum to something near the normal. If this is done while the operation is still being performed, great care must be exercised not to soil the field of work nor to dirty the hands of the surgeon which may be close by.

As soon as it is seen that shock is appearing the patient's head must be lowered so that profound anemia of the brain may not cause death. If the shock occurs during operation the Trendelenburg position must be adopted, though not to an exaggerated degree; after the patient has been returned to bed, the foot of the bed should be put on a chair so that for several hours gravity helps to counteract shock; and no pillow should be allowed beneath the head. In extreme cases both legs may be bandaged from the toes upward to the hips to force most of the blood into the abdomen, chest and head; and the arms may be held up by the nurses. No doubt many lives might be saved by resorting to these simple measures if surgeons would but take the trouble to give the necessary instructions and then see that they are carried out.

As soon as possible artificial heat must be applied—hot water-bags or bottles being placed around the body and legs of the patient, and blankets applied so as to retain the heat.

Here the hypodermic use of strychnine can do no good—and it may do harm. Glonoin in dose of one milligram (or gr. 1-100 tablet) either under the tongue, whence it is almost instantly absorbed, or hypodermically will do more good than anything else medicinally. After a few minutes digitalin may be injected, and still later, if the pulse flags, 10 minims of camphorated oil may be injected.

If the shock continues for some hours, hypodermoclysis may be repeated, using the buttocks instead of the mammary region; and rectal injection of hot salt solution may be given also; or better, hot water with or without a little beef extract; and in some cases hot coffee.

As the shock disappears the bandages may be removed from the extremities; later the bed may be lowered to the level; and finally a pillow may be allowed.

2. The treatment of shock dependent in great measure upon excess of anesthetic must of necessity differ from that just described.

In the first place, unless there has been decided loss of blood also, the injection of normal salt solution is quite unnecessary, even if not harmful. In the second place, the indications are squarely to counteract the effect on (a) the respiration and (b) the circulation.

If the trouble is discovered while the patient is still on the operation-table the anesthetic (if an inhalant one) must be discontinued instantly and the work completed as speedily as possible. If respirations cease, artificial respiration must be instituted and maintained for hours, if necessary—many lives have been sacrificed by too early discontinuance of artificial respiration. One hour is the shortest excusable time for cessation of efforts to induce respiration. The sphincter ani may be forcibly dilated. When respiration has been restored it is best to finish the operative work, if possible, since it may be days before the conditions would warrant the administration of an anesthetic again. But cocaine should not be injected (as has been suggested by someone) since it has a tendency to produce cerebral anemia—sometimes of alarming degree.

The head may be depressed in this form of shock, also, with advantage; and if oxygen be at hand, its inhalation is excellent in effect.

Here strychnine hypodermically is of advantage; and if the face be pale, glonoin may precede it. Failing pulse, after return to bed, calls for camphorated oil.

An enema of a pint of strong coffee is of decided advantage in awakening one too deeply asleep from any anesthetic. It is notably indicated in prolonged sleep, with shock, following the use of hyoscine-morphine injection.

Inhalation of ammonia is also of use in arousing patients.

Early administration of small quantities of champagne (or diluted whisky) by the mouth is advisable.

When the heart's action continues weak for a long period large doses (4 grams, or 1 teaspoonful) of spiritus ætheris compositus may be given every hour, properly diluted.

3. When shock comes on immediately after extensive trauma (as at the end of an amputation of the breast or extirpation of a huge fibroid) without excess of anesthetic or great bleeding, its character should be instantly recognized and proper measures immediately adopted. If it appears soon after the patient has been returned to bed it might be mistaken for concealed hemorrhage; but the prostration is different, the veins are prominent with cyanosis, there is restlessness, etc., which make the kind of shock usually recognizable.

In this condition the Trendelenburg position does no good. A hot water-bag placed over the heart seems to be of service. Warmth to the extremities is imperative.

A hypodermic injection of atropine will send the blood out of the deep structures into the capillaries.

It may be followed in a few minutes by one milligram (gr. 1-67) of digitalin.

Thirty drops of a 1 : 1000 solution of adrenalin by mouth every half hour until reaction sets in is highly recommended.

Sparteine in doses of half a decigram (gr. 3-4) may be injected an hour after the digitalin is given.

An enema of salt solution, very hot, often helps to revive a patient apparently near to death; or hot coffee may be substituted.

4. Shock due to fear—the “nervous collapse” of some authors—is totally eliminated by the use of the hyoscine-morphine combination for surgical anesthesia. The perfect tranquillity for hours following operation is in striking contrast to the anxiety, nervousness and discomfort of the early hours following the ordinary anesthesia by ether or chloroform.

When the older form of anesthesia is employed, however, shock sometimes does occur, the collapse usually making its appearance several hours after completion of the work.

A small dose of codeine phosphate hypodermically (half a decigram, gr. 3-4) either alone or with 2 centigrams (gr. 1-32) of strychnine generally calms the patient and allows the circulation to resume its normal character.

If the nervousness continue, however, an enema, containing one and a half gram (grs. 20) of potassium bromide and one decigram (gr. 1 1-2) of aqueous extract of opium, may be given and the patient left alone.

Postoperative Thirst.—While postoperative thirst is not so distressing after hyoscine-morphine anesthesia as under the old ether and chloroform narcosis, it still is a matter of importance, particularly in abdominal surgery where it is often desirable that twenty-four hours shall elapse before anything is taken into the stomach. It is especially pronounced when there has been great loss of blood, unless the normal amount of serum has been partly restored by hypodermoclysis.

To overcome this thirst a liter (quart) of water may be injected into the rectum or colon unless some special contraindication exists; preferably just after the patient has

been returned to bed. When thirst becomes urgent, moistening the lips and tongue frequently with a cloth dipped in ice-water is a most comforting expedient; but the patient should not be permitted to suck ice, since holding bits of ice in the mouth above all other things increases the tendency to vomit. Later a little juice of lemon may be permitted—it helps to appease thirst remarkably. In ordinary cases a teaspoonful of water every fifteen minutes may be given after the first four or five hours; in abdominal sections after twelve hours, unless vomiting occur—if it does, twenty-four hours must be allowed to pass before a drink is permitted.

When thirst causes great restlessness and nervousness a capsule of 5 grains of chloretone with a little sip of water seems to give great relief. After twenty-four hours, if vomiting does not occur, cold water may be allowed freely, save in the most exceptional cases, as where there is too free drainage from the abdomen.

Postoperative Vomiting.—Vomiting immediately after an operation usually means nausea from the anesthetic. Persisting for one or two days it may be but a continuation of this nausea, or it may depend upon oncoming sepsis. Vomiting beginning twenty-four to forty-eight hours after operation generally indicates acute sepsis.

With the use of ether, retching and distressing nausea (and sometimes vomiting) may persist for many hours in spite of the utmost care as to proper preparation. When chloroform is employed there may be no great nausea with children or with other patients if the operation be of short duration; but if anesthesia is prolonged there is apt to be very distressing vomiting for many hours. When it is anticipated that the operative work will be long-continued, one gram (grs. 15) of chloretone may be given an hour before operation, by the mouth; this greatly diminishes the tendency to postoperative vomiting.

With the use of the hyoscine-morphine anesthesia there is practically no nausea or vomiting, even though only two doses are given, supplemented by a little chloroform.

In the treatment of vomiting due to the anesthetic the first thing is to have the patient keep quiet; nervousness and an inclination to talk unquestionably increases the tendency to vomit. The next thing of importance is to withhold water, so long as nausea persists nothing should be taken into the stomach. Holding ice in the mouth only increases nausea.

Rarely (especially after ether), when the patient is retching and straining it is a good plan to give a pint or more of water at once and let the patient throw off this; then abstain from water for some hours. The application of an ice-bag to the throat seems to diminish nausea, particularly with nervous women.

If the vomiting continue more than twelve hours it is best to wash out the stomach by passing a stomach-tube and pouring in a liter (quart) of normal salt solution; and if early catharsis is desired, leaving a large dose of epsom salt in the stomach before removing the tube.

If the emesis becomes alarming, four hypodermic injections of eserine salicylate should be made, using one milligram (gr. 1-67) every hour. This generally arrests the vomiting, even from obstruction of the bowels, and makes the patient more comfortable than will any form of opiate.

Sometimes, when the vomiting is dependent principally upon nervousness, a clyster containing one gram (grs. 15) each of chloral hydrate and potassium bromide in starch water will not only check it but give four or five hours of sleep, from which the patient awakens refreshed and calm.

As soon as the ejecta change from bile-stained fluid to dark, greenish brown there is acute sepsis present, and proper attention must at once be directed to correction of

the cause of trouble—preceded, always, by lavage of the stomach and stimulation to the highest possible degree; for without energetic measures “black-vomit” means death.

WRIST: GANGLION OF

A wrist ganglion is a hernial pouch of a tendon sheath upon the back of the wrist. It may be treated the same as ganglion elsewhere, though with even more strict antiseptic precautions on account of the danger of infecting the joint. (See ganglion).

X-RAY

X-Ray Burns.—For the simple dermatitis following too severe application of x-radiance, some simple, bland ointment (like unguentum aquæ rosæ or zinc ointment) is best; antiseptics, even of mild strength, irritate too much. Nature usually takes care of the case in a few days or weeks. But only too often pain becomes more and more pronounced and a slough appears, with great prostration and loss of flesh. It is well, upon the first appearance of pain, to anesthetize the patient and clean the field carefully without chemical irritants; estimate the amount of slough, and make a wide incision, and remove all tissue until a good supply of blood is found.

If the burn appears in a favorable place ordinarily the incision should be carried about five-eighths of an inch in depth, giving an ordinary wound that will granulate readily and will be without the terrible pain which accompany most of the burns. This, of course, cannot be done readily on the feet and hands, owing to a lack of tissue; so that recourse must be had to the use of drugs or procedures that will promote healing and allay the pain.

The use of normal salt solutions sometimes works

wonders as a moist dressing. Once in a while warm boric acid solution may be used with comfort. Aseptic blood preparations or sterilized milk with a boric-acid preservative may be used, but, as a general proposition, ointments, etc., are objectionable, and tend to aggravate the pain. Frequent and deep cureting is indicated if the ulcer become chronic and should be carried out as long as the yellowish white membrane exists in the wound.

X-Ray Treatment of Cancer.—One of the best and most impartial observers, Williams, of Richmond, after long trial and careful study reaches the conclusion that for superficial malignant growths, unless they have invaded adjacent bones and cartilages, the ray should be used because when rightly applied the result is so uniformly successful. Its application is painless, there is less scar and deformity and a recurrence is in proportion to the thoroughness of the treatment. Carcinomas on the lip or connected with any mucous membrane should be excised, because for some reason they seem to be especially resistant to the ray.

For malignant growths of the deeper structures, including the breast, radical surgical procedure should be recommended, always. It is but rational that the surgical operation should be followed by sufficient exposures to the ray to destroy malignant cells that have been left. It is possible to destroy such cells an inch or two from the surface, and the patient should have every possible chance to have the malignant cells completely eradicated or destroyed. Recurrent growths of the breast often yield readily to x-ray treatment because the recurrence is so near the surface. The prognosis in these cases depends on whether the neighboring glands or the thoracic cavity are invaded. Morton, of New York recently said that his opinion of the status of the x-ray is that it

is. at a period of partial therapeutic eclipse by reason of its being abused by ignorant workers. Many doctors think that all they have to do is to buy a machine and administer the x-ray to get cures. As to the particular radiation that comes out of a tube, he believes in the therapy of a high vacuum tube, 7 to 12 inches alternating spark, because we have to deal not with deep lesions only, but with intermediate lesions as well as superficial. A tube that gives no yellow color whatever is the safest; it obliterates the chance of injury to the patient and gives the best therapeutic effect.



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